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Concerted Action Among Rubber Buyers.

THERE is at the present time among rubber manufacturers an openly-expressed hope that there may be an early revolution in Brazil. Not because the manufacturers are all jealous of the prosperity of our sister republic, but simply because they are perfectly willing to see a break in the rubber market. There are others also who predict with a smack of enjoyment in their tones that the present speculative tendencies that our Brazilian cousins are developing, are certain ere long to bring about a financial crash which shall reduce the price of rubber. However this may be, it shows conclusively that the eyes of the whole rubber constituency in this country are at the present time firmly fixed upon Brazil. Just how much American manufacturers will stand in the way of price raising in crude rubber it is hard to predict. They all agree that it would not be such a difficult thing for them by concerted action to bring this price down in a very short time. It has indeed been seriously talked that an association of rubber manufacturers might well be formed if rubber goes much higher; and that each one should bind himself under a heavy forfeit not to purchase crude gum above a certain figure; and in case this figure was exceeded their mills would be closed until they could purchase as they wished. This has practically been done once; and if straws show which way the wind blows, it is not unlikely that it may again take place.

In the exact language of a telegram recently received in Boston: "One of the banks in Pará has gone back on Vianna." This intelligence comes to us as being strictly reliable. The information upon which it is based is to-day the common property of two of the largest rubber companies in the United States, and in mutual felicitations over this fact old-time animosities are for the moment forgotten. From present indications, therefore it will probably not be long before the chronicler can write the obituary of Vianna's "corner."

Have You Bought a Life Preserver?

NUMBERLESS jokes have been cracked at the expense of those who, when frightened by any unusual commotion at sea, or even in transit from New York to Boston by water, at once don life preservers and get ready to battle with the relentless sea. There is, however, another side to this question. The life preservers are supplied to steamships for a purpose, and that is, for the use of the passengers in the time of peril; and while every man may not be the best judge of existing dangers, he at least does not want to take chances. An effort in the way of overcoming all this, and keeping one's self armed with life-saving appliances, and yet not exposed to the ridicule of bystanders, is to carry a little inflatable rubber life preserver. One of these that is really air-tight is far ahead of the ordinary canvas jacket full of pulverized cork. Indeed, in many cases it has been found that these cork life

preservers are absolutely useless, and would weigh one down rather than buoy them up. Charles Goodyear spent a great deal of time in perfecting rubber life preservers, and suggested many ways for overcoming the loss of life that attended ocean travel. To-day, in spite of ridicule, many of the crack yachts are fitted with cushions that are in themselves rubber life preservers. They even go further than this, and have mattresses and pillows that, floating on the water, would support a dozen men. Now that the summer season is coming on, and that surf bathing and still-water bathing will be indulged in by the multitude, as it always is, there should be an ounce of prevention taken in the way of proper rubber life preservers. Were it the fashion for bathers universally to wear something of this kind, the loss of life would be greatly reduced. There is no question but that drowning accidents happen fully as often to those who are expert swimmers, as to those who know nothing about the art, for the former venture into deep water and dangerous places, while the latter only paddle along in the shallow waters. If then, it could become a fad that all should wear some little inflated ring of rubber that should in no way encumber them, in no way detract from their enjoyment, but that would supply the trifling amount of buoyancy that is needed to keep the human body afloat, how much better it would be. How it would diminish the loss of life, and how it would save the worry that wives, mothers and sweethearts must indulge when they see the gentlemen about whom their love centres taking what seem to them great risks, without even ordinary precautions.

Obituary.

MR. AUGUSTUS S. GATCHELL, a veteran in the rubber trade, died at his residence in this city a few days ago. Mr. Gatchell came to this city from Baltimore in 1853, and afterwards opened a store on Broadway near Cortlandt Street. about ten years ago he met with reverses from which, coming at his advanced age, he never could recover. Few living men ante-date him in trade, and he had many warm friends who had grown up with him. He was 79 years old at his death, and left no family, his wife and five children all having died many years ago.

A Strange Disappearance.

ON Tuesday, March 24, James F. Brook, the senior member of the Trenton firm of Brook, Oliphant & Co., announced by wire to his Boston agents, that he would be at their office the following morning. Since that day he has not been seen nor can any trace of him be found. Mr. Brook was a man who had a host of friends, was a genial, progressive business man, and one who enjoyed the fullest confidence of all. He is said to have had some trouble with his head of late and it is thought that this may have something to do with his sudden disappearance.

In the recent \$300,000 Chicago fire the Northwestern Rubber Co., who were one of the sufferers, had policies for \$83,500 on its stock.

An Interview with President Converse.

IT is doubtful whether there is a man living whose mission it is in life to write about rubber boots and shoes who would not willingly walk a mile on a very cold day to enjoy a chat with the founder of the Boston Rubber Shoe Co. If President Converse lives until July 28, 1891, he will begin his 71st year. Despite his years, it is not correct to speak of Deacon Converse as "a gentleman of the old school." There is nothing about him which savors of antiquity. He is not opinionated. He does not "crawl into his shell," after the manner of many men of 70 and become secretive. He is in touch and sympathy with the times and the younger men who make current business history.

It is because of this and because of the courtesy of Mr. Converse that men, whether young or old are glad to meet him.

In the interview, of which this article is merely an outline, Mr. Converse began by saying that the Boston Rubber Shoe Company had no formal announcement to make to the trade at present. When he was asked whether he did not have a message for his competitors he said:

"Competitors? Why, our competitors are, I hope, our friends. The rubber manufacturers, to all outward appearances at least, are as happy as a brood of chickens."

"But appearances are often deceptive."

"There's no deception on our part, I assure you. We have all along been dealing with the utmost frankness both with our customers and with other manufacturers. We have nothing to cover up now—nothing to explain, no policy to apologize for."

"Of course you understand that the action of the Boston Rubber Shoe Company in reducing prices has been criticised?"

"Yes, but by whom? By those who, regardless of a verbal agreement, were selling at lower figures than the agreement contemplated."

"By this cutting of rates did the Boston Rubber Shoe Company lose any patronage?"

"It did. We scrupulously adhered to the terms of the agreement. Others did not. Under those conditions what more natural than that we should occasionally lose a customer."

"Do you wish to be understood as charging that all the parties to the verbal agreement you spoke of broke faith with your company?"

"No; just the moment that one company failed to respect the verbal agreement the bars were let down. When we became satisfied that the understanding was being ignored we simply concluded to go back to the same figures we had one year ago in March, and that is just what we have done."

"When do you think prices will advance?"

Mr. Converse smiled. Interpreted his smile meant that the question was too general and that he was neither a mind reader nor a prophet.

"When other companies may advance prices I cannot

say. I do not even know whether they are contemplating an advance. Speaking for this company, however, I can say that our prices will not be advanced this year."

"Not this year?"

"No, not in 1891."

"Do you look upon Vianna's operations in Pará with solicitude?"

"No, solicitude is not exactly the most expressive term to employ. In my humble opinion the market may be said to be clouded by a little veil of uncertainty, as the result of Vianna's undertaking. Just specifically what the outcome will be it is impossible to accurately predict. Personally I feel no uneasiness and for this reason: There are 1400 tons more rubber on hand than there were at this time last year. There is therefore no reason why the present price of rubber should be maintained, and still less ground for predicting higher prices. My opinion is that rubber is now as high as it will be. Vianna, it is conceded, owns a great deal of rubber. His operations have given Pará a fictitious market value; but he does not control Central America, or Africans, and thus far the tendency of the speculation in which he is engaged has been to curtail production. The time is ripe for the curtailment of production. There are too many factories and too many goods."

"Do you think it likely that, in the event of Vianna's developing unexpected strength, the manufacturers would compose their differences, and agree to purchase no rubber at inflated prices?"

"I assure you there are no existing differences to compose. The present situation is largely the result of overproduction and excess of competition. So far as our company is concerned, we would not pledge ourselves jointly with any other company or companies to refrain from purchasing crude rubber."

"Mr. Converse, is your company making any money at existing prices?"

The founder of the Boston Rubber Shoe Company graciously refrained from intimating that the question might be construed as a leading one. He only replied:

"I really can't say; and in fact I don't know that we care."

"You will pardon the bluntness of the remark, but it is current in the trade that the Boston Rubber Shoe Company reduced prices to punish a contemporary."

Mr. Converse laughed, "We are not punishing any one," he said. We have no one to punish. No, our policy is not one of revenge or aggression. We recognize the fact that our competitors have rights which are as sacred as those we claim for ourselves. When I said, a moment since, that I did not know that I cared whether we were making money or not, I meant this: We cannot always sell at a profit. In every industry there are periods when it is impossible to realize any margin of profit. In our case, where there are so many employes depending upon us for support, we must continue to make goods, and get as much for them as we can. At present the entire trade is suffering from overproduction."

A Chat with Mr. Ballou of the Woonsocket Co.

MR. W. S. BALLOU, sales agent of the Woonsocket Rubber Co., in one of his late trips to New York, remarked with regard to the business and outlook of the year: "We are running full handed all the time, shutting down at the moment for a few days, as is customary with us in April to take account of stock. We have orders for the season ahead sufficient to keep us busy. We turn out at the Alice Mill at Woonsocket 30,000 pairs of shoes per day, and at Millville 8000 pairs of boots. By dividing and concentrating the work, giving each mill one kind to manufacture, we can get along very economically and make excellent goods. We advanced our prices March 15, and by so doing we improved our position in the market. We gave all hands due notice of the new prices, and allowed them to come in at the old quotations. At the same time we have practically intimated to the trade that we would not continue to sell goods at any stated figure, irrespective of the future price of rubber. Of course the cost of gum during this summer is one of possibilities, and even now, there is little if any profit in its manufactures, and certainly a loss at the old figures. We are in a position now to again advance our prices, if circumstances require it, while some of the other companies have unmistakably set their faces against it. Some have, however, followed our example, and are quietly asking the advance."

"Our trade is good all around. We are having a good run on 'rolled edges,' and it is an excellent year for 'high cut' slippers. There is a growing demand from the South year after year, but of course it does not compare with the Northern trade. Still such cities as New Orleans take a good quantity of our goods. Our export trade to Europe is good. In England a heavy leather shoe is worn, and the demand for rubbers is not large, but we send large quantities to Germany, Austria and Turkey. The latter country calls for our goods with great freedom, and on account of their reputation the firms handling them insist on their being stamped with an American name. A Russian-American Company with its headquarters, I think, at St. Petersburg, handles a great quantity with its particular stamp on them. We also send many goods to Japan."

"We have been gradually increasing the working capacity of our new Alice Mill since its completion. It is a matter of getting the labor to set a mill of that capacity fully at work, but Woonsocket is growing rapidly, and operators have been flocking in as fast as we could have expected. I believe that the demand for boots and shoes this year will be equal to all efforts and capacity that we have at our command."

AN inquiry comes in a recent mail as to how the resins used in rubber work may be known to be free from acid. A simple test, before published, is to dissolve a given amount of resin in three times its bulk of sulphuric ether; when thoroughly in solution, dip a piece of blue litmus paper in the liquid, and if it becomes red, acid is present; if it retains its normal color, the resin is neutral, and perfectly safe to use.

Ode to Vianna.

Air: "O, Susanna."

I HAD a dream the other night,
When everything was still;
I dreamed I saw Vianna dear
A sliding down the hill.
The hill was steep, his runners smooth,
And other sliders rude
Yelled: "Mind your eye, my rubber friend
And don't you be too crude!"

Chorus.—O, Vianna! Wait, and you may see
Your big mistake in holding on for more than 93.

The men were patient (in my dream)
The Baron sought to bleed;
And buying very gingerly,
According to their need.
When, suddenly, there came a crash
Which thundered through Pará,
And while Vianna wept with rage
The others laughed "Ha! ha!"

Chorus.—O, Vianna, how lengthened was your phiz,
When rubber fell and you said—well, "I thought 'twas
Gondoriz!"

Rubber Goods in Bermuda.

HAMILTON, BERMUDA, April 2, 1891.

EDITOR INDIA RUBBER WORLD.

DEAR SIR: I wish to express my thanks to you for the pleasure I have received in reading the copies of the *WORLD* you so kindly sent me here. I confess I look forward each month to the time I shall receive it, for it is always completely filled to overflowing with good rubber news and items which are of the utmost interest to every one who is at all interested in the rubber business. This region as far as rain is concerned might be called the rubbermans paradise, as it is quite liable to rain every fifteen minutes. If we could have one season in Omaha such as it has been here the past two months we should enjoy it in rubber clothing sales. Since writing before I have made more inquiries about the trade here in rubber goods, and find some points which may be of interest to our rubber men. There is a duty of 5 per cent. on all goods received, no matter whence they come, for the purpose of supporting the home government here; so our manufacturers stand on an equality with Europe. There are five drug stores carrying good stocks, and many stores selling dry goods, clothing, groceries, boots and shoes, and general stocks as well as fancy goods, and there is a friendly feeling toward the States. I find more druggists' sundries than other rubber goods come from the States, but have seen a little footwear also; however, nearly all the other goods come from England, especially rubber clothing of which a good deal is used here. This is a great field for lawn tennis shoes, as nearly every one wears them and for nearly the whole year. I believe our manufacturers could get most of this trade by making the proper effort. All the produce of this country is shipped to New York which would also help trade in return. During the past few days my health has improved and I hope to return to New York about the middle of April and will give myself the pleasure of calling on you at your new quarters which, without doubt, are very fine. Trusting increasing prosperity will continue yours I am,

Yours truly,

O. H. CURTIS,
Pres. Omaha Rubber Co.

Increasing Use of Rubber Tires.

DURING a few years past there has been a steady growth in the demand for rubber bicycle-tires, and in England it has become a matter of public interest. Mr. A. Strauss, in charge of the bicycle rubber department of the New York Belting and Packing Co., said not long since: "This business is growing to large proportions in the United States, and when you consider that there are 100,000 bicycles made yearly in this country, and 40,000 more imported, all of which have tires of the best rubber, it can readily be seen that a good percentage of the world's supply is demanded for this purpose.

"Each tire weighs on an average between three and four pounds, and with renewals we consume not far from one million pounds per annum. Our company is doing a very large business in bicycle tires, and we are, and have been devoting, a great deal of attention and experimental work to the subject.

"There are three sorts of tires on the market; the solid cushion and pneumatic. The latter is the newest and consists of a rubber tube of pure Pará jacketed in a stout canvas sack which prevents it from being burst by over inflation and other accidents. The whole is covered with a larger encasing tube made also of Pará rubber, and is fashioned into as substantial a shape as practicable. The canvas sack is cemented to the outer rubber tubing, and the interior is inflated by an air valve. This tire has not proven altogether a success. It is liable to be punctured, and has to be used carefully, but I learn that substantial improvements are being made in it to overcome the difficulties that are found in its use.

"The solid tire is largely used, and has been from the start, and it is from this that all improvements have been started. The cushion tire is probably the best now in use, and is in its infancy. It is not liable to puncture, and takes up the jar in riding very nicely. The trouble we find in it is that the constant compression of the tire as it moves over the road causes it to crack at the sides in the interior, and this is the weak point in it. It is made of the very best, old dry Pará compounded with nothing but sulphur. The best size is $1\frac{1}{4}$ inches in diameter within its outer circumference with a $\frac{3}{8}$ inch air-tube, which should be in the true centre.

"We are at present engaged in experiments on this tire which promise to yield excellent results, and expect to bring forth the best thing yet. There have been several attempts before to improve it, but the trouble is in the buckling, and until that is overcome all that is left for us to do is to make it of the best materials and proportions known. Regarding wagon and vehicle tires great progress is being made. They are solid and quite as durable as iron. At present they are used principally in this vicinity on city pavements, Brewsters using most of them. Lately the Columbus Buggy Company in Ohio have begun to apply them with (I understand) good success. In smaller vehicles, baby carriages, etc., they are used largely. The rubber used in vehicle tires is generally a compound of coarse Pará. The vehicle tire business is getting into large proportions, and we are devoting much attention to it. We now do more in it than all the other companies combined."

THE board of trade at New Brunswick, N. J., are considering the idea of giving special concessions to a New York firm whom they are trying to induce to locate there. The firm think favorably of New Brunswick as a manufacturing point. All they ask is ground on which to erect a factory. They manufacture hard rubber goods and employ about 200 hands. Their capital stock is \$50,000, and their factory is now located in New York at 100 Duane Street.

New Goods in the Market.

TO MANUFACTURERS AND PATENTEES:

It is our aim to embody in this department descriptions and illustrations of all the latest novelties introduced in the market, to the end that jobbers, retailers and buyers of rubber goods generally may look here for information as to everything new that each month or season brings forth. Manufacturers and patentees are, therefore, most cordially invited to co-operate with us in making the department as complete and attractive as possible—the distinct understanding being that no charge whatsoever, either direct or indirect, will be made for these publications. Our reward will come through giving our readers valuable information; and that will be reward enough if manufacturers but give the information freely and in all cases at the earliest practicable moment.

In forwarding descriptions of new goods, be careful to write on one side of the paper only; be brief, but always write enough to give the buyer a clear idea of the article you offer; give your full address, plainly written; and in all cases send a small illustration or wood cut if you have one.

THE Pedestrian Tennis, Oxford cut, is a new tennis shoe, that in style and general make-up embodies all that is excellent in these most popular shoes. It is made up in men's, women's, misses' and children's sizes; and in great variety of styles as to upper. A particular excellence of this shoe is the rubber tip that extends from the sole up over the toe of the



shoe, giving it far better wearing qualities. The shoe also having twelve eyelets in the place of the four or six that are run in many shoes, may be laced so as to fit the foot more completely than those that have the less number. The sole is so moulded as to represent a leather sole filled with hob nails, between the rows of which are run bars; thus preventing slipping, no matter in what direction the step may be taken. Manufactured by the American Rubber Co., Boston, Mass.



—The above is fac-simile of a registered trade mark the Cleveland Rubber Co. has used for upwards of twelve years, and which they stamp indelibly on every 30 feet of their "Shield High Grade" Belting. The guarantee thereon is very strong, and at once gives assurance to the consumer that he will be indemnified against loss should the belt he has purchased prove defective. It also shows that the manufacturers have great faith in the durability and excellence of their belting, as it would not be prudent to give such an open, broad warranty did not the quality of the goods justify it. The cut of this trade-mark was, by an unfortunate blunder, inserted in a New

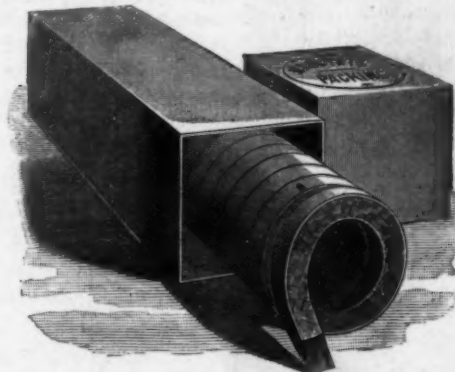
Goods notice in our last issue, where the incongruity of its position in connection with the subject of foot-balls must have attracted attention. We offer our apologies to the Cleveland Rubber Company for this error. However, the cut now appears in its right place, and, as an artistic trade-mark design our readers will agree with us that it loses nothing from being twice seen.

—The Balmoral Tennis, as shown in the cut, is a high cut tennis shoe, the upper being made in black, white or seal brown; or in a black and brown stripe that is very handsome. The sole



of this is moulded as in the pedestrian tennis, in imitation of the hob nail and bar; and these goods are made by the same company, the American Rubber Co. of Boston.

—We present herewith the handsomest cut of rubber packing that we have seen in many a long day; and according to all reports this packing is just as good as it looks; it is made of a combination of cotton duck and rubber with an elastic back and



is thoroughly lubricated. The rubber back acts as a cushion, which resting against the rear of the stuffing box keeps the packing closely pressed against the rod, with but little pressure from the gland. Manufactured by the American Steam Packing Co., Kilby Street, Boston, Mass.

—The attention of the rubber trade is now devoted largely to specialties involving taste, neatness, utility and comfort. The Hodgman Rubber Co., New York, have lately placed on the market, a steamer-cap which deserves more than a passing notice. It is called the Imperial Mackintosh Cap, and is made in black, navy blue, grey, olive and plaid colors. The material is of mackintosh goods, lined with sillesia, and it is well ventilated. For sea and other uses, in which might be included bicycling—it will probably have a large sale, indications of which are already apparent.





"PAULINE."

Bailey & Co., Boylston Street, Boston, Mass.

—One of the latest ladies' garments this season, and one that is already a good seller, is what is known as the "Pauline." It is made in silk, and silk and wool, and all of the fashionable fabrics, is entirely new this season, its peculiarity being the long full cape, which style has also been added to ulster bodies and is now quite universally worn. This garment, following closely in the wake of the stylish wraps and cloaks as made by the most progressive houses, is an excellent piece of work in its general design, and one that has not as yet been excelled. Manufactured by the Clifton Rubber Co. Franklin Street, Boston, Mass.

—A new water bottle that attracts much attention, and that is a pleasing addition as an ornament in rubber stores, is one that has a fleecy cotton flannel covering made in pink, white and brown, the colors being beautifully shaded and mixed. It is so arranged that it can be drawn over the rubber bottle and tied around its neck by a silken cord and tassel. Manufactured by C. J.



—Fatigue caused by cycling is mostly the result of vibration. The Pneumatic Rubber Tire absorbs all vibration, and enables a rider to go long distances, day after day, with but little fatigue. It is, without doubt, much faster than a solid or cushion tire; therefore, the ordinary rider will not submit to being left on every possible occasion by inferior men, simply because they ride Pneumatics. A machine fitted with these tires is more easily managed than any other. This claim holds good on any kind of going, even over mud and sand, where one could not possibly ride a solid-tired wheel. The rubber used is the finest possible, being ninety per cent. of pure gum. The thickness of both inside air tubing and outside covering has been increased considerably over what it was formerly. The canvas covering which incases the air tube is of the best Irish linen, and, in addition to being cemented, is strongly sewed, so as to remedy the one defect of the old tire, namely, the working apart of the seam which was then joined by cement only. The outside covering has also a strong, peculiarly woven piece of heavy linen canvas vulcanized to its inside surface, preventing any stretch

—Another boot that is bidding for popular favor is the men's short boot of the Bell brand series. This is made either with a pebbled leg or dull finish, and has not only singular excellence



in its shape, but contains good stock and is carefully made. This is also furnished in men's and boys' sizes, and manufactured by the Boston Rubber Co., Boston, Mass.

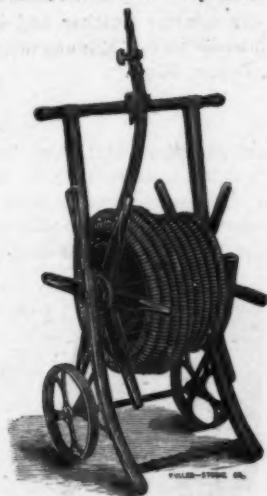
transversely, but, lengthwise stretch, thus giving life buoyancy while resisting all lateral strain. The threads of this canvas are laid up very hard, and treated in a manner that renders them hard and tough enough to resist the point of a nail, pin, or any sharp projection. Before the tire is attached, the rims are coated with a rubber solution and covering of canvas sufficiently thick to form a cushion which entirely prevents chafing or cutting on the rim. If any accident should happen to a Pneumatic tire any rider can repair his tire in a few minutes by the roadside. The repairing outfit consists of a hidden pressure tube filled with quick drying solution, rubber for patches, a small piece of canvas, etc., and full directions. The chances are that one will ride all the season without injuring the tire, as the risk of this is no greater than that of breaking the frame on any high grade machines. With the Pneumatic tire there is not the slightest danger of the frame giving out as the tire completely absorbs all jar and vibration. A wheel fitted with this tire has never shown any weakness in the frame. For sale by Wright & Ditson, Boston, Mass.

—The Excelsior Combination Syringe, on account of its small size and peculiar construction, is adapted to many uses for which others are not available. The syringe has a rubber stopper which fits into the neck and answers as a cork for any ordinary prescription vial, thus preventing leakage and break-



age. It is always ready for use, and obviates the necessity of carrying three articles, viz.: bottle, syringe, and a vessel in which to empty a liquid to charge the syringe. Manufactured by the Vant Woud Rubber Co., New York.

—About this season of the year when stores are stocking up with garden hose, the wise storekeeper is very apt to put in a certain number of hose reels; because he knows just as certainly as the hose sells, there will be purchasers for the reel.



These reels are made in infinite variety. Of them all perhaps as popular a seller, and one that is at once reasonable in price and durable, is that herewith illustrated, known as the Sylph; and for sale by J. Francis Hayward, 160 Congress Street, Boston, Mass.

KARL ———, a bright little man of four years, received a number of rubber toys for Christmas, which make a noise on being pressed. Some time afterwards his papa wanted to put on his overcoat, but Karl ran away. He was caught by the arm and brought back, when he turned to his papa and said: "Don't pinch my arm that way, papa; it don't squeak."

—A recent and striking novelty which commends itself at sight, and which is already assured of very wide sale this, its first season, is the Submarine Bathing Cap, just introduced by Messrs. Williams & Dewson, 8 College Place, New York. The illustration here given is a very faithful representation of the real thing. The ordinary bathing cap is made of one piece of material gathered on a circle of elastic cord, which holds the cap in position on the head. The vital objection to this is the fact that the water invariably gets under the cap through the gatherings about the cord; and this objection has restricted the sale of the goods enormously. The "Submarine" Cap removes this objection entirely. The entire cap is made of thin, pliable sheet rubber of the highest grade, and instead of being gathered about a cord, it is neatly and perfectly welded to a thin and very elastic rubber band a half inch wide, which fits closely about the head, and renders it absolutely impossible for the water to pass through. It is an article which instantly commends itself, and though it has just been introduced, the manufacturers have made some very large sales. Certainly no stock of rubber goods is complete without it.



PATENT APPLIED FOR.

Piscatorial.

HE'S out! He's out for early trout
Which, just now, all the rage is;
From head to heels he's lines and reels
And hooks—*Who is?* Why, Sage is.
With flies and bait he's never late,
The boys know "he's a hummer,"
And, though a hustler, it is said
There's flies on Sage all summer!
For bass or carp he's just as sharp
And, if I were a jester,
I'd say he'd capture any fish
Except a Pike called Chester.

A Beautiful Catalogue.

WE are in receipt from the Boston Belting Company of a copy of their catalogue, which in point of printing, arrangement and illustration, is a model trade publication. Besides a handsomely illustrated price list, it contains a carefully edited and compiled collection of facts and suggestions relating to the transmission of power by rubber belting, useful and instructive to users of power generally, but particularly so to those who make extensive use of such goods in manufacturing establishments. By careful perusal of this part of the catalogue, all mistakes either in the purchase or use of belting may be avoided, and many of the rules and figures given are also applicable to leather belting. The cuts and description of Forsyth's Patent Seamless and Elastic Centre Belting are extremely good. The award of a gold medal for this belting is noticed elsewhere in this issue. A great variety of other rubber goods are also listed. We advise our readers who have not received this elegant catalogue to lose no time in obtaining it.

THE plant of the Cleveland Rubber Paint Works, of Cleveland, Ohio, was recently destroyed by fire.

—The Bay State Tennis is a shoe that has many friends, and is sure to give good service. It is not ventilated like the Boston Ventilated Tennis, but is made of good stock, has special patterns for the upper, the popular style being a handsome stripe.



The gusset being made up in light cream color, gives a handsome effect to the shoe as a whole. They are made in men's, women's and boys' sizes, either Balmoral's or Oxfords. Manufactured by the Boston Rubber Shoe Co., Boston, Mass.

—A shoe that will keep out the water and still be light and comfortable is the foothold, one of the best of which is the "Veto." By a special pure gum extension under the shoe shank it so fits



the foot that it effectually shuts out all water or mud that might work in between the sole of the leather shoe and the rubber. This shoe is patented, and its name is the subject of a trade mark. It is manufactured by the Boston Rubber Shoe Co., Boston, Mass.

—The Alford & Berkele Co., New York, are introducing Goldman's Atomizer and Sprinkler, which is useful for watering flowers, clothes, and for medical purposes. For disinfecting and deodorizing purposes it is very convenient and efficacious.



It consists of a rubber bulb fitting into a frame with an aperture on the upper side for the admission of water, etc., and needle holes on the under side for spraying surface. It is the size of a lemon squeezer, and weighs five ounces. It retails for 50 cents, at which price it is stated that large quantities have been sold. The construction and operation of the atomizer will be understood from an examination of the cut.

—A brief description of the "Babies' Delight," manufactured by the Davol Rubber Co. of Providence, R. I., appeared in our March issue, but the cut was delayed and unfortunately could not be printed with it. Speaking of this children's pacifier, a Boston druggist said: "My assistant used to buy ordinary nipples and fasten them on a wooden form for the children to wrestle with. People round here called them 'bilies.' We had quite a trade in them, but when I saw these, I gave up billymaking and bought a lot of them. They sell like hot cakes."

DAVOL RUBBER CO.



—A light summer shoe of pretty pattern and first-class make, is the Newport slipper herewith shown. It is cut high in the back, has drab lining, has a strap over the instep leaving the upper part of the shoe uncovered. It is designed especially

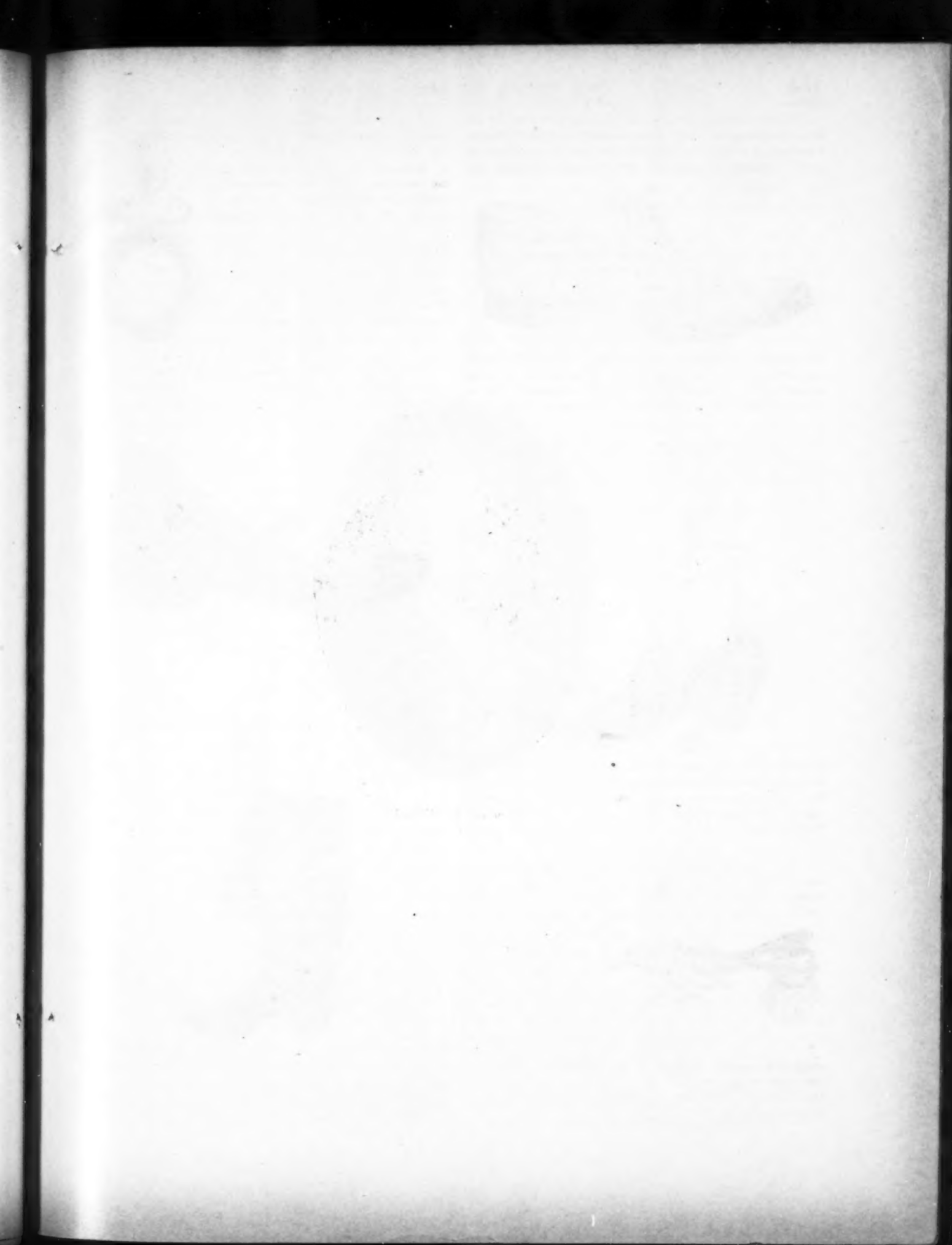


for wear during the summer weather, and is made in men's, women's, and children's sizes. Manufactured by the Boston Rubber Shoe Co., Boston, Mass.

—A boot that is extremely popular among both jobbers and retailers, particularly at this season of the year, is what is known as the "Storm King." It is one of the series of the Bell brand boots, and in this particular shape is made to take the place of the old sporting boot. The leg is not quite as long as in the old-fash-



ioned hip sporting boot, and it is a trifle lighter, so that it can be folded over and worn in the form of a short leg boot, as many prefer to do when the greater length of leg is not needed. These goods are made for both men and boys, pure gum finish, and are manufactured by the Boston Rubber Co., Boston, Mass.





CHARLES MACINTOSH.

Pioneers of the Rubber Trade.

CHARLES MACINTOSH.

SO many people are familiar with the word "Macintosh" as applied to a very popular garment that no doubt many of them will be interested to see the likeness of the gentleman after whom this garment was named. We printed nearly a year ago a detailed description of a visit to Charles Macintosh's rubber factory by a writer in *Sharpe's Magazine*. There have been also from time to time extended accounts of exhibits given by this firm at various fairs in different parts of the world. When, however, it comes to a personal description of Charles Macintosh and of his achievements, we find ourselves at a loss, which the following letter will explain:

EDITOR OF THE INDIA RUBBER WORLD:—We have pleasure to send you by this mail an electro of an engraving from an old portrait of Charles Macintosh, and we believe this to be a good likeness. We are enabled to furnish this through the courtesy of the *India Rubber Journal*, London, who had the engraving made from a portrait we furnished at that time. We regret that we have been quite unable to find any particulars relating to the life of Charles Macintosh, and think that it can be found in one of the encyclopædias. We have made considerable efforts to find it and regret that we are not able to help you more in the matter. We are, dear sir, yours faithfully,

CHARLES MACINTOSH & Co., L't'd.

The editor of THE INDIA RUBBER WORLD upon receipt of this, examined the encyclopædias in the best libraries, and even went through Poole's Index for Magazine Articles, but found nothing. In an old magazine, however, the following brief article was found:

"In a biographical sketch of Charles Macintosh, printed for private circulation by his son and successor in the firm, George Macintosh, the following details are given to the circumstances that led to the invention of the water-proof double textures which have made the name of their inventor famous throughout the world: 'Upon the introduction of coal gas into Britain for the purpose of lighting apartments and the streets of towns and cities, manufacturers found that the tar and other liquid products resulting from the process accumulated in their hands in the shape of a disagreeable and dangerous nuisance. Mr. Macintosh, chiefly with a view to the production of ammonia for manufacturing purposes, entered, in 1819, into a contract with the proprietors of the Glasgow Gas Works to receive for a term of years the tar and ammoniacal water produced at their works. After the separation of the ammonia in the conversion of the tar into pitch to suit the purposes of consumers, the essential oil called 'naphtha' is produced, and the thought occurred to him of its being possible to render this also useful from its powers as a solvent of caoutchouc or India rubber. By exposure to the action of naphtha he converted this substance into a water-proof varnish, the thickness and consistency of which he could vary according to the quantity of naphtha which he employed in the process. Mr. Macintosh obtained a patent for this process in 1823, and established a manufactory of

water-proof articles, which was in the first instance carried on at Glasgow, but eventually he formed a partnership concern with Birley and other friends in Manchester, where operations on a very extensive scale were entered upon and the business carried on under the firm name of Charles Macintosh & Co."

Mr. Thomas Hancock, in his narrative, "The Origin and Progress of the India Rubber Manufacture in England," thus refers to Mr. Macintosh: "In the year 1823, one of my partners, Mr. Charles Macintosh, of Glasgow, obtained a patent for rendering two fabrics water-proof, uniting them with a solution of rubber, hence they were called 'water-proof double textures,' and afterwards came to be universally known by the name of 'Macintoshes.' Early in the year 1825, I obtained a license from Mr. Macintosh for the use of his patents. He also entered into negotiations with parties in Manchester to carry out his plans, and a large building with machinery was selected for the purpose. He manufactured the varnish at Glasgow, where he also made the coal naphtha which he used as a solvent of the rubber."

A letter from Captain John Franklin, afterwards Sir John Franklin, dated April 30, 1824, after acknowledging the receipt of a large quantity of water-proof canvas for covering boats, etc., says: "Will you also make up four life-preservers of a size for stout men, and eighteen bags about six feet long and three broad, fitted with corks, for filling with air for the party to sleep on, and four pillows of the size of the one you gave me."

How much the rubber clothing trade and indeed the whole rubber trade are indebted to Mr. Macintosh for his discovery of the use of naphtha in connection with India rubber may be gleaned from the following:

"An interesting report of a trial between Mr. Macintosh, the patentee for the application of a solution of India rubber in coal-oil to cotton and other fabrics for the purpose of obtaining a cloth at once perfectly flexible, free from smell and entirely water-proof—and Everington & Ellis, and others acting in concert with them, who had infringed the patent, is given in the Repertory of Patent Inventions. The patent was taken out in 1823 by Mr. Macintosh, of Glasgow (now of Manchester), a well-known and very ingenious manufacturing chemist, and was of course within two years of the expiration of its term. Several years elapsed before the patented article came into extensive use and afforded profit to the inventor. At present the demand for it is very great and the quantity manufactured in Europe and in the United States very extensive. The cause of the patentee was sustained by highly respectable witnesses, among whom were Professors W. T. Brande, J. F. Daniell, J. T. Cooper, and Dr. Turner; Richard Phillips, Arthur Aikin, Alexander Gardener, and J. G. Children. The facts were substantiated that, prior to the date of the patent, no person had used coal oil as the solvent of caoutchouc and applied it to the purposes of a material for water-proof clothing, and that the oil or volatile inflammable liquid, which is one of the products of the distillation of coal at the gas factories, was, before this application of it, considered very much as a waste material or refuse. It is the only material which can be cheaply

obtained that answers the purpose of a perfect solvent for India rubber.

"On the part of the defendants it was shown that the native milky juice of the plants, which, on desiccation, yields caoutchouc, has been long applied in South America to the same purpose of cementing two surfaces of cloth to each other, and that outer garments had been occasionally made of such water-proof fabric.

"Dr. Hancock, one of the witnesses for the defendants, had seen water-proof articles exhibited for sale in Demerara in 1812 and 1813. Socks made of this article had also been sold in England in 1821. It appeared, however, on the trial, that there was a repugnance to the use of the South American cloth on account of its unpleasant odor. George Green, the celebrated aeronaut, testified that he had long used a solution of India rubber in oil of turpentine, as a cement for his balloon fabrics, and that the same material had been worn as a cloak.

"No one had appeared as a rival to Mr. Macintosh for more than ten years after the patent was taken out, and no other cloaks possessing the qualities described in his specification were exposed for sale. In 1824, he had an order from the Ordnance Office to the amount of £500.

"About twelve months ago the defendants (said the Attorney-General) took up the manufacture of the article under the pretense that they had bought some man's patent, and they labelled their cloaks: *Fanshawe's improved patent India rubber water-proof cloth*. But there is no such patent as Fanshawe's in existence; this is pure invention.

"At the conclusion of the argument, his Lordship (the Vice Chancellor) commenced summing up, when the jury intimated they were satisfied, and found for the plaintiff.

"In this trial, as in those which Boulton and Watt triumphantly sustained in the defense of their patent, and in others of a like nature, there can be no question that the cause of justice in its decision in favor of individual rights will ever be found in accordance with the highest evidences and most rapid advances of national prosperity."

Collection of Rubber, Methods of Collecting and Sources of Supply.

GREYTOWN seems to be a common shipping point for Centrals. The small craft which ply along the coast gather up the rubber in trade and centre at this port whence it is exported. This, if care is not taken, often causes a confusion in grades, it all being called Mearague sheet.

In Honduras and Guatemala the rubber is cured with lime and is inclined to be soft. The tree in its perfection is in Mearague. Guatemala has the lowest variety, full of a black, resinous substance which is not liked.

Spanish Honduras contains the Tuno tree in abundance, but this does not belong to the Castilloas.

The West Indies do not export any rubber but are named because St. Thomas is a point of collection where steamers obtain a fair grade coming from Yucatan and Belize.

In Costa Rica there is an abundance of rubber.

In Panama there is a good supply of trees growing to a height of twenty feet, but the canal enterprise has absorbed all the labor and the industry is now very quiet. Before the work on the canal began there were two establishments at Panama engaged in cutting and drying the rubber and 2,000 men were employed in collecting it in the forests of Darien and Panama. With the return of labor to the forests, which is probably already occurring, more will be exported, and as the season is now on it may be that this year will show an enlargement in the supplies from that country. The season will terminate in six weeks, not only in Panama but throughout all Central America.

In Panama the trees have been unmercifully slaughtered, having been actually cut down to obtain the gum, and this may be adverse to a full revival of its export trade.

There is a peculiarity in the milk of the Panama tree. It will keep for a week or more in a shady place, whereas the Pará varieties will spoil within twenty-four hours, emitting a very disagreeable odor. One of the Booth Line sea-captains remarked to the writer not long ago that one could not form any idea of the disagreeableness of this odor, especially in the districts near Peru. It was simply a stink intensified to the last degree of offensiveness.

Another peculiarity of the Panama tree is that it grows upon elevations, the roots being perceptible until they touch the water's edge. Enormous snakes confront the gatherer and each one offers battle before he can be dispossessed. This is possibly one of the incentives to cut down the tree and get the milk as readily as possible. After the tree is prostrated circular grooves a foot apart are cut in the trunk, from each of which the milk is gathered. The gatherer in Panama and contiguous districts undergoes great hardships. Drenching rains occur daily, and frequent hurricanes cut avenues through the forests.

The deadliness of the climate in some places in Darien has no parallel except from opposite causes in the Arctic regions. There is, therefore, every inducement to fell the trees and get the milk in large quantities at once, and 40 or 50 pounds has been the daily average per man.

The temperature of the water is as high as 80 degrees. Sometimes during a heavy rain it will fall to 76 degrees, after which fish, sensitive to the least approach of cold, may be seen floating dead on the surface, although this may result from quantities of poisonous matter washed down at such times.

Carthagenia rubber comes in strips three-quarters of an inch thick, is black in color, tough in texture and oftentimes "tarry." It is of good quality. The approach from Carthagenia is made through Venezuela and Guiana out of the Castilloan into the Hevean district and a very good rubber from the interior finds its way to the coast, there bringing a good price.

Besides Carthagenia strip, we have Guayaquil and Esmeralda in different grades which bring medium prices.

Guiana rubber probably finds its way in good quantities to Pará, the distance there not being great after one passes into the interior. The Colombian countries have a

good export trade to Europe, but Central America sends most of its supply to New York. All countries show plainly within the past few years a marked decrease in production.

Manaos May Have a Telegraph Line.

THE necessity of a telegraph line to Manáos, as hitherto pointed out in THE INDIA RUBBER WORLD, has been increasing constantly with the growth in importance of the rubber trade of that point. As Manáos has become a port of shipment direct to New York and Europe, it has become of prime necessity to the business interests centring there to know the daily price of rubber in foreign markets, and also to have banking houses, both of which are impossible without telegraphic communication. In the last report sent to Washington by Mr. Joseph O. Kerbey, before retiring from the United States Consulate at Pará, it was stated that the Provisional Government—not then superseded by the Constitution—had resolved to attempt to supply this urgent need, and had appropriated 100,000 milreis (about \$54,600) for a survey of the route. "This task is no small one," the Consul wrote. "It really seems to be a choice among impossibilities. For the first 500 miles a land line is impossible, and the upper 500 miles is unattempted and almost impenetrable forest. The choice seems to be a river cable; but the question is, where will the cable be next year when there are islands where this year there are fifteen fathoms of water and *vice versa*? They have put an energetic man at the head of the survey expedition, Mr. Alexander Haag, who will succeed if success is possible. If the project is executed, Macapá, Cametá, Santarem, Itacoatiara, and Manáos will be added to the list of telegraphic stations, which will mark a red-letter day in the development of the Amazon valley and revolutionize the rubber-buying business, transferring a considerable part to other points, and especially to Manáos."

Rubber in Vehicle Axles.

NOT only has the advantage of rubber placed under machinery to prevent jarring and vibration been generally recognized, but it has been advantageously employed as a cushion for the axles of vehicles. In Great Britain, France, Belgium, Canada, Germany, and Austria, it has for a considerable time been used in this way as well as in this country, infallibly ensuring safety, absolute comfort and economy. In each hub are securely imbedded, so as to avoid all friction, two elastic rubber cushions which, surrounding the axle-box at each end, support the whole weight of the vehicle and its load. Without rubber bearings, every one is painfully aware of the vibration, jarring, jolting, pounding, and noise that attend the passage over ordinarily good roads, to say nothing of those rough ones that one so commonly has to drive over, or of that class of way which in newly settled districts is fittingly called a "corduroy road." But with axles fitted with rubber, vehicles are made to run so easy that the most delicate persons—to move whom is almost a matter of life and death—are subjected to neither fatigue nor discomfort. Besides, it has been calculated that an economy of fifty per cent. in wear and tear is secured with the assistance of rubber.

Exchange as Affecting the Rubber Trade and Other "Worries."

"EXCHANGE," said a rubber importer a week ago as he deftly concocted a cup of coffee in true Brazilian style, is a cause of worryment to us, and upsets all calculations. A few weeks ago the milreis was worth 27 pence now it is 18 pence or a decline of 33½ per cent. In transactions in anything in this country as staple as rubber that would easily represent three profits.

"Of course at this end we cannot accurately say what is the matter, but I believe that it is owing to a mistake of the government in demanding that export duties shall be paid in gold. Brazil has very little gold, and has to draw heavily on Europe to keep things moving.

"The Amazon region sells three-quarters of its rubber to the United States, and buys four-fifths of what it consumes from Europe. This makes the course of exchange tortuous. They have to work very hard in the Amazon region to make both ends meet. The banks of Emission are anxious to send their currency out into the rubber districts, and bring in the product, for that is the only way to get gold. In order to do this they take risks that would make a Wall Street high roller wonder why he was born up here. They will advance ninety per cent. on the rubber up the river. There can be no splitting hairs, the rubber has to be gotten and sent forward, of course when everything is carried on at a high pressure upsets are very likely.

"The Minister of Finance not long ago was taken suddenly ill with a colic or some stomach disorder, and Exchange went down two per cent. The alarm was so great that the physician only allayed the excitement by promulgating throughout the country before business hours the next morning that his (money) nibs was out of danger, in fact had not been in any trouble which could not have been allayed by a cup of ginger tea. Stomachs, it is said, rule the world, but some particular ones in Brazil are carrying a big responsibility, and not in the feeding line either. Of course it might have been very much worse and a panic have ensued.

"Brazil, rich as she is, has got to make a new loan, for the gold it now has is leaving it, and then there will be some fine and plain talking. The Rothschilds have always stood by it, but on the last two or three occasions they have intimated that a change in the administration of financial affairs was quite necessary for a continuance of credit. But the Amazon countries are loosely held in the confederation, and government is more a day-to-day makeshift than anything else. I think Brazil will have to mortgage its Central Railroad down there, as it is now called, and the pawning of that is like putting one's coat in hock; it is about the last thing you have. It would hardly pay their debts. So far as reciprocity or any other treaty is concerned they will give anything, and never care much about *quid pro quo*.

"One of the gentlemen connected with the house, undertook one some time ago for an English speaking government. He talks of it as boy's play, and he was well remunerated. The trouble is, however, things so easily gotten are not worth much in the end. The merchants who are packing up their samples to unload their wares on the poor gatherer of the rubber forest, or the toiler on the coffee plantation, will be a study when enthusiasm begins to yield to reflection.

"Take a country where shoes will be covered with mould in a single night, and merchants like ours who, as a rule cannot pack tools that will go safely beyond two drayages, and you can judge of the difficulties that are in our way. But we started on Exchange, and that is enough to worry us, we will let the other fellows spend their money, and learn their lesson."

A Success on Dry Heaters.

THE following letter from a gentleman well known in the rubber trade, to a company who are fast becoming acquainted with the largest rubber manufacturers through the excellence of their electric controlling devices, speaks for itself.

BOSTON, Feb. 28, 1891.

N. E. Fire & Heat Regulator Co.

GENTLEMEN:—We have used your Automatic Electric Regulator on our new day heater since January last, and can say it has given us the very best results, maintaining an even degree of temperature in all our heats since we have had it in use. We consider it indispensable, and would not be without it for many times its cost. We can recommend it to all the rubber trade as the one thing needed for their heaters.

Very respectfully,

THE EVANS ARTIFICIAL LEATHER CO.
Walter N. Dole, Manager.

The "Herald's" Portrait of E. S. Converse.

HON. E. S. CONVERSE, of the Boston Rubber Shoe Company is one of the best examples of what a rich man can do and be to be found in New England. Mr. Converse is a native of Needham, and passed his 70th birthday last summer. His first business venture was in a clothing store at Thompson, Ct., and his next in shoes and leather at Stoneham, Mass. In 1850 he came to Malden, and in 1853 established the Boston Rubber Shoe Company. His factories at Edgeworth and Middlesex Fells, in Malden, are to-day the largest rubber manufacturing in the world. He has been a public benefactor to Malden. He gave the city its public library, one of the finest in the State, as a memorial of his son. The building cost \$125,000. The city's beautiful park, Greenbank, is another gift from Mr. Converse; and his liberality is further seen in his contributions toward the new Baptist Church of Malden, and its new City Hospital. He is one of the men who delight in seeing their wealth do good during their lifetime. Mr. Converse was mayor of Malden in 1881 and 1882. He was the founder and is president of the First National Bank of Malden and director in the Exchange Bank of Boston. He is trustee of the Boston Five Cent Savings Bank, and of Wellesley College. He is president of the Rubber Manufacturers' Mutual Insurance Company, and is an active member of the Middlesex Fells Association.

Will Para Secede?

THE people of Pará, according to a correspondent of the New York *World* writing from there, insist that not only is no benefit derived from the central government at Rio de Janeiro, but that the union of the Brazilian provinces results in injury to them. Thus complaint is made of the division, or, rather, lack of division, of the public revenues. All import duties collected at Pará and 9 per cent. of the export duties go to the General Government. Half the entire national revenues, it is claimed, comes from the two provinces of Amazonas and Grao Pará. "Consequently," writes the correspondent, "the Paraneze would like to separate and form an independent nation. There is really less resemblance between them and the people of the southern provinces about Rio in feelings and interests than between the North and South of the United States. The only communication between Pará and Rio de Janeiro is over 2500 miles of ocean. There are no land connections. The

ultimate division which, according to competent opinion, will surely take place in Brazil, will cut off Pará and the Amazon Valley, and the Fonseca Government recognized this fact when it called Justa Chermonte, formerly Secretary of the Brazilian Legation at Washington, and afterwards Governor of the Province of Pará, to Rio and made him Minister of the Interior. But, while his appointment was very gratifying to his countrymen, it can only allay for a time the growing discontent."

The masses of the people in northern Brazil, it seems, entertain very vague ideas regarding the fundamental difference between the limited imperialism of Dom Pedro and the military republicanism to which they have been treated by Gen. Fonseca. There is a difference in many respects between the people of Pará and those of the national capital and its vicinity, out of which grow differences in political thought and ideas. But the Paraneze are not so much interested in the form of government as in the practical results attained.

Regarding the control of the rubber business at Pará, this extract from the *World's* correspondence is given for what it is worth. "The leading house handling rubber is that of Businelli, La Roque, Da Costa & Co., which monopolizes the bulk of the inspissated waterproof gum. Baron de Gondariz, of the Companhia Mercantile, known as the rubber king, deals heavily. Sears & Co., formerly W. R. Grace & Co., are liquidating. The American house is Norton & Co., and it ranks fifth in the amount of business done. Earle Brothers and Charles R. Flint & Co., of New York, are interested in this company. The price of rubber has advanced immensely, owing to a combination formed by the export houses of Pará. It is now over 80 cents a pound and has an upward tendency. The gum is bought at cash and held for advance, and the manufacturers of rubber goods will be bled mercilessly unless they break the combination."

Growing Scarcity of Gutta Percha.

WHAT the projectors of the Guatemalan and Pacific cables are to do for insulation is a serious question. There simply is not enough of the sort they want, and that, as they say, settles it. An attempt to buy such a quantity would send gutta percha up to four or five dollars per pound. The Guatemalan people have fairly decided to use caoutchouc. If both should decide to use Pará it would mean something to the rubber market.

There is no good substitute for gutta percha. Balata would not do even if it could be had in quantities enough. On the banks of the Orinoco a gum is said to be nearly if not quite equal to gutta percha but it has not figured in commerce much beyond the botanical gardens.

Rubber Belting Still the Best.

SEVERAL trade papers have of late advocated the use of steel wire in braided or woven form as belting for driving machinery of various kinds. In spite of the high recommendations that they give to goods of this sort, we believe the general experience has been that belting of this sort is not a success. As a sort of compromise, the pulleys over which belting of this kind is run are frequently covered with rubber; but even that does not give as good results as the genuine rubber belting manufactured by some reliable house. The only wire belting that we know of that is strong and flexible and durable is that which is a composition of duck, wire and rubber. The strands of wire being specially prepared for this work and woven through the duck.

Current Gleanings.

BY LIGHTNING ARRESTER.

THE *Electrician* Electrical Trades Directory and Handbook for 1891 has reached THE INDIA RUBBER WORLD, and is found to be a useful adjunct to the books of reference in our office. This well-known hand-book has grown wonderfully during the few years that it has been established, and the present edition contains upwards of 900 pages of useful matter. The directory division consists of 430 pages, containing alphabetical and classified lists of firms, companies and individuals engaged in the electrical and allied trades in all parts of the world. The supplementary matter contains a mass of useful information in respect to various standard types of dynamos and transformers, wiring tables, lists of the submarine cables of the world, and similar valuable data arranged for ready reference. An interesting addition to the body of the work is a biographical section giving brief sketches of the attainments of many well-known electrical men belonging to both sides of the Atlantic, some of the sketches being accompanied by portraits.

The increasing scarcity of gutta percha is causing no small amount of concern in electrical circles in Europe. In this country very small quantities are used for wire insulating purposes, as the American taste runs more to compounds, in which rubber constitutes a more or less prominent ingredient. In England, France and Germany, however, the case is very different, as gutta percha exclusively is used for submarine cables, and very often for underground work as well. The price for the best grades ranges at present in the neighborhood of \$1.30 per pound, and one of the large English cable factories uses, in busy times, not less than nine or ten tons of the crude gum every week. It can readily be understood that the ever increasing difficulty of procuring good gutta percha and the constantly upward tendency of the price demanded are viewed with serious misgivings by manufacturers of submarine cables. So serious a difficulty has this become that prominent engineering firms in the United States who have meditated embarking in submarine cable construction on a large scale, have been obliged to abandon the idea in face of the impossibility of procuring gutta percha in large quantities at a reasonable price.

It is now said that the French Government, having lately instituted an exhaustive inquiry into the barbarous methods of gathering the gum practised by the natives of the Malay Archipelago, which promise to result in the extermination of the *isonandra gutta* in that part of the world, has decided to attempt the cultivation of the *isonandra* in Algeria. M. Heckel, the Professor of Botany at Marseilles, in a communication to a Marseilles paper, points out that even if the gutta percha trees are found to thrive in Algeria, yet it will be many years before any gum can be obtained from them. To solve the difficulty as to what to do in the interval, should the supply from Malayan sources give out, M. Heckel states that a substitute for gutta percha can be obtained from the *Karité*, or *butter tree*. This plant has been found by several African explorers, notably by Colonel Gallieni and M. Jean Bayol, who have described it as growing in vast forests on both banks of the upper Niger and in upper Senegal. M. Heckel has made numerous experiments with the gum of the *karité*, and he claims that the results of his investigations prove conclusively that there is an almost complete similarity between the sap of the African *karité* and that of the *isonandra gutta* of Malayan fame. The only qualification added by the Professor is that between the two substances there

exist very slight differences in chemical constitution. Statements like these will be received with much interest; but a few miles of submarine cable insulated with *karité* and giving good electrical conditions, would be more convincing than any number of laboratory experiments and analyses.

By the way the name of the new gum, or rather of the tree, is pronounced in three syllables, and is not to be confounded with *kerite*, which of course was well-known long before *karité* had ever been heard of, or at any rate mentioned in connection with insulation.

The London *Electrical Review* devotes considerable space in a recent number to discussing the question raised a short time ago by THE INDIA RUBBER WORLD, of the employment of India rubber as a dielectric for submarine cables in place of gutta percha. Our contemporary is disposed to think seriously that some such change must come about before very long and cites a few of the pros and cons in the case. The chief objections to the use of rubber, are that a rubber core for submarine cables is more difficult and more expensive to manufacture than one in which gutta percha is used, that the painting is more difficult, and that the behavior of a faulty rubber core when under is test is peculiar and erratic, sometimes rendering the localization of faults a matter of great uncertainty, and occasionally quite impossible. This of course is a grave difficulty, as cable repairing is expensive work, and every day's delay incurred in effecting necessary repairs, increases the expense of the repairs, and the loss from interruption to traffic.

The *Electrical Review* thinks that whatever may be the arrangements for and against the employment of India rubber core in submarine cables, THE INDIA RUBBER WORLD has broached a subject which ere long must become a matter of serious consideration. The supply of gutta is becoming very scarce, and the quality of the gums obtainable varies extremely. "When the supply of gutta percha altogether ceases, a consummation likely to occur before many years elapse, what are we to fall back upon?" asks our contemporary. It places little faith in the *Karité*, holding that the fact of its difference in chemical constituents is sufficient to condemn it. "No other practical substitute has been discovered, and we must consequently look upon India rubber as the dielectric of the future for submarine cables. As a proof that India rubber is considered a suitable insulator for submarine cables, the Cuba Submarine Telegraph Company have recently had manufactured and laid for them about 160 knots of India rubber core cable between Cienfuegos and Batabanó, on the south coast of Cuba. This cable was adopted after an experiment of nine years with a similar type laid between Cienfuegos and Santiago de Cuba, a considerable portion of this section lying in a depth of over 1500 fathoms of water.

The manufacture of submarine cables in France is now firmly established and the new factory of the Société Générale des Téléphones at Calais has been in full working order since December last. The core is manufactured at Bézons, an inland town on the Seine, and is sent to Calais to be armored. The monthly output of the Calais works is estimated at 500 knots of complete armored cable. At present work is actively being carried on with the manufacture of a considerable length of cable to be laid by the French West Indian Telegraph Company between Cayenne, Martinique and Brazil and along the Brazilian coast.

Opening His Eyes.

TWO gentlemen were seated recently in a private dining room at a prominent New York hotel, and while gossiping one of them remarked:

"You must have a snap in your business,—you're about the only manufacturer, aren't you?"

"The only manufacturer in the rubber business," the other said with some amazement, "why, no indeed, my dear man, there are hundreds of others. It's a big business."

"Big business," was the somewhat contemptuous reply. "Why, outside of boots and shoes and clothing, what is there made in rubber in this country? Or put it another way, suppose all the other rubber goods in the United States were suddenly blotted out of existence, who would miss them?"

After this sapient inquiry, he sat back with his thumbs in the armholes of his waistcoat and puffed a half-dollar cigar with supreme content.

"Well, supposing we begin in the homes of this country and take away a few of the conveniences that depend for their usefulness upon rubber. Let us see if we could not be curtailing your comfort and mine a bit," said the other, calmly.

"All right, your list will be a short one."

"To begin with, suppose this summer your lawns were to be sprinkled by the old-fashioned hand-sprinkler; in other words, suppose you had no garden hose. Then suppose you had none of those handy window-washers with the rubber edge; suppose you depended for the packing of your faucets upon the leather washers that in the olden-time were so continually getting out of order; take away that mat with your name in red letters upon it that you are so proud of in your vestibule; steal the wringer from your laundry woman; take away the rubbers from your wife, the silk gossamers from your daughters and your own valued mackintosh. Nay, further, go up into the nursery and take away from your rebellious infant the nursing bottles, the teething rings, the rubber rattles and toys. When you are passing your wife's boudoir, steal that beautiful atomizer that she prides herself upon; let her warm her cold feet in the hollow of your back in place of using a comfortable water bottle. Then, too, in the same cold weather, remove the weather-strips from door and windows and let the cold come in, and see how your coal bills will increase. The rocking chairs that formerly have gouged such holes in mopboard and plastering, may again do it, for of course you will remove the little rubber tips with which they are now shod. Your knives must be handleless for a little while until you get bone or ivory to replace the rubber handles. The sponge in the bath room will lose its sponge bag. Your eldest daughter, who is trying to help about the house, and is taking cooking lessons, will rebel, and idle as she did before, when you take away the rubber gloves, and these are but a few of the household conveniences that rubber has given you."

"Well, by Jove," laughed the other, "you've made out a pretty good list. I did not believe there was such a variety used in the house, but I guess you've got to the end of your rope."

"Oh no, I haven't either," said the other, lighting a fresh cigar. "I was just about to take you out into the stable and pull out that new buggy of yours. Did you ever notice that it was covered with an excellent rubber top, and that the boot was also of cloth coated with rubber? That the carriage cushions within are covered with an artificial leather which is nothing else than a rubber compound? That the whip-socket is a rubber one? That the whip itself has a core of rubber running through it, and that the anti-rattlers that do away with that

nerve-racking rattle are made of rubber? I don't know what your harnesses are, but I would be willing to wager that some one of them has hard rubber trimmings. That last horse you bought wears rubber interfering balls, and had you known the uses to which India rubber could be put, that valuable animal which you lost a year ago might have had a hard rubber hoof fitted in the place of the one he lost and would have been a good animal for years to come. Then, too, your stable boy will tell you of the excellencies of rubber curry combs, what a nice thing the horsetail protector is, and when the creature is ill that the only thing to give medicine through is a rubber bottle. He will ask you, perhaps for a fly net made of rubber fabric, for a surcingle with a rubber extension piece to it; and your mare, who is tender-footed, he will advise shoeing with rubber horse shoe pads. If you are a benevolent man, you will use a check-rein that, instead of being of the old-fashioned rigid kind, will be partly of rubber, that it may give to the motion of the horse's head. When you ride horseback, you yourself may want rubber stirrup pads, and when you were yet young, had you taken your best girl out to ride on a cold winter's night nothing in the wide world would have been so comfortable as a buffalo robe with a lining of rubber next the skin side."

"Let's get out of the stable," said the other with a laugh, "you've pretty nearly convinced me that there is something in the rubber business."

"Just see in army life, for instance, what uses rubber was put to in the enormous pontoons that were used in bridging rivers, in the powder-bags and shot-bags that were made of rubber, in the recoil blocks under the great guns, and soldiers' canteens, and, most necessary of all, the soldiers' rubber blankets. Think of the advantage of the rubber covered pocket-maps that the officers had, of the rubber drum-covers that the bands had. In fact," continued the gentleman, growing eloquent, "there is hardly anything you can do to-day, either in business or in the line of recreation, but what rubber, in some form, adds to your comfort. If you go on a steamer excursion you are depending on the life-buoys and life-preservers for a deal of your feeling of safety, and without doubt, unless you are a pretty good sailor, the rubber bucket that adorns a portion of your cabin may be of considerable use to you when the billows run high and *mal de mer* assails you. If you are a sporting man and go out for a little fishing or shooting, a hard rubber fishing pole is about as pretty an apparatus as you can carry, and both flies and worms that you use will probably be made of rubber. Your decoy duck will certainly be made of that elastic material, and if you haven't a water-proof game-bag, you're 'not in it.' In dropping into this hotel in the evening, how you would kick if the billiard tables were not fitted with the best rubber billiard cushions, and while your partner makes his shot, you draw out a rubber tobacco pouch and calmly take a chew without ever thinking that your comfort depends on that little article. Ten minutes ago you handed me a hard rubber match-box to light my own cigar with and seemed totally unacquainted with the fact that its manufacture was a part of the rubber business."

"By the way," continued this encyclopædic gentleman, "you were exceedingly stuck on one of the tank plays a little while ago running in a New York theatre, did it occur to you then that the tank would have been an impossibility had it not been for the existence of the rubber business? I would be willing to gamble at this moment that those dainty feet of yours are adorned with corn-plasters, the backing of which is India rubber. Now, if you are not satisfied with my statement that this business is a large business, an important one, and that the

comfort of the human race is exceedingly dependent upon it, I will take the trouble to make out a list of the few things that I know of that are made in India rubber, a portion of which I have already quoted to you, and will take a week and read it to you."

"I give in," was the laughing reply, "It's a big business—bigger than I thought for, and I acknowledge that you are posted on it. Now let me give you a bit of information that I alone possess. I know a place around the corner where they have some of the prettiest little hard rubber beer mats that I have ever seen; will you join me over there in looking through the bottom of a glass at these artistic pieces of vulcanite?"

Rubber or Vulcanite Grindstones.

THE French method of preparing artificial grindstones, and presumably emery wheels, is one of exceeding interest, and one that really forms to-day a distinct portion of the rubber business. More than twenty-five years ago it was inaugurated in France, and about the same time numerous patents were taken out in the United States covering processes similar to this, many of which have been exceedingly remunerative to the owners. The materials used in the manufacture of these grindstones are pulverized quartz, powdered flint, powdered emery or corundum, and India rubber dissolved by some suitable solvent. These materials, after being carefully mixed together, form a substance that is exceedingly durable, and that will, when used for sharpening tools, outwear by many years any natural stone known.

The pure rubber, after being massed and sheeted, is cut up into strips and put into a boiler which is heated to about 225 degrees centigrade. In order to hasten the melting point of the rubber, 9 pounds of heavy oil of tar are added for every 100 pounds of rubber after the lapse of two hours. The rubber melts very gradually, and after another two hours have passed the same proportion of oil of tar is again added. After the lapse of another two hours this is again repeated, so that in the course of six hours 27 pounds of oil of tar have been incorporated into each 100 pounds. This oil of tar is not a permanent part of the mixture, for the major portion of it evaporates and passes off through the head of the boiler into the chimney flues and is lost. When the mixture becomes as liquid as possible, it is run out from the boiler into a tank. The steaming mass throws off an exceedingly unpleasant gas, for which reason the tank has a large metallic cover with pipes to lead the fumes off into the chimney. The next process in the forming of the rubber compound is the admixture of the sulphur. This is put in in generous proportions, 33½ pounds being added for every 100 of rubber. In order to prevent porosity, which would surely ensue after the sulphur is added, as sulphuretted hydrogen would be generated, 7 pounds of lime and 12 pounds of litharge are immediately added. The rubber, the sulphur, the lime and the litharge are the necessary parts of this compound, or rather those in which great care must be taken in preparation and in getting the right proportion. The mixture of the adulterant which is to form the cutting part of the wheel is a matter of less accuracy, although important. Usually 15, or sometimes 20, pounds of powdered emery, flint, quartz or corundum, are added and stirred in by mechanical means until a stiff dough is obtained. This compound is then worked on an ordinary mixer provided with a doctor, much as porous plaster compounds are worked in the mills devoted to that purpose. During the process of mixing and kneading there is that constant escape of the tar fumes, making the mixing room an exceedingly unpleasant place to work in. In some mills, there-

fore, the mixers are covered with a sheet-iron hood, and these vapors are also carried away into the chimney.

The compound when thoroughly and homogeneously mixed, is calendered into sheets from one-half to three inches thick. These sheets are then put upon a cutting table and are cut into cylindrical disks by a machine that is in common use for cutting pump-valves and articles of that kind in almost any mechanical goods factory. These disks are then placed in the moulds and submitted to hydraulic pressure, after which they are forced out and again laid on the table. Another cutting machine is used to trim off the ragged edges and to bore a hole through the centre.

The next and the last important process is that of vulcanization. The vulcanizer for curing goods of this kind is very similar to that used in all mechanical goods factories, but is more particularly like that used in hard rubber mills. The compound for corundum or emery wheels, as any rubber man will at once recognize from the large amount of sulphur incorporated in it, is to be hard rubber compound, and as the wheels many times have a large mass, the cure must necessarily be long and slow. The vulcanizers used as a rule in France are the jacketed vulcanizer, which is not so much in favor in this country. Even though the mass of rubber compound is kept under great pressure, there is a constant escape of sulphuretted hydrogen, for which allowance is always made. The wheels, after being cured, are removed from the moulds and cooled, and trued up with tools made especially for that purpose, and then are ready for the market. As we have already stated, these stones will outlast a great many times anything that nature furnishes, and are used the world over for the finest sort of grinding and polishing purposes.

A Test for the Resisting Force of Rubber.

AN English manufacturer of India rubber some years ago, desiring to test the strain one of his best compounds might be subjected to, tried the following experiment: A piece of vulcanized gum, two square inches in area and one and one-half inches thick, was placed under a five-ton steam hammer. The hammer was lowered upon it quietly and rested upon the rubber without perceptible effect. The mass of iron was then raised two feet and dropped upon it, without injury. It was then lifted four feet and dropped, when the rubber was torn, but none of its elasticity destroyed. After this, the most severe tests were given. A similar block of vulcanized rubber was placed between cannon balls and the whole power of the heaviest steam hammer was employed. The cannon balls split the block, but in no way could the elasticity of the India rubber be at all injured.

Medals Awarded.

THE Boston Belting Company has received the award of two handsome medals (one of gold, the other of silver), from the Massachusetts Charitable Mechanics Association. The gold medal was awarded for Forsyth's Patent Seamless Elastic Centre Belting, an invention of their general manager, Mr. James Bennett Forsyth. This belting is made on an entirely new principle, and is claimed to be, strictly speaking, the only seamless rubber belting in the market. The silver medal was awarded for general excellence. The medals are said to be of artistic design, and to be well deserved by the display which the company made at the exhibition of the Association. We congratulate the company upon their receipt of this evidence of the high merit of their goods.

Working up in a Rubber Factory.

BY A FORMER SUPERINTENDENT.

I AM reminded by a letter from a friend that I did not tell in the last number the outcome of the superintendent's proposition to enter into a plan with him to mulct the firm that he worked for out of a certain proportion of their Pará rubber. The story is one that always irritates me to tell, because that rascally superintendent so thoroughly got the best of me, and made me appear to such conspicuous disadvantage. After discovering the trap-door near the washing machine, I had, as related, pulled the rubber out, and shut the door down. Not content with this, I had driven a couple of nails in there to keep it down; and as the superintendent said nothing further to me about his plan, I said nothing also but kept hard at work, running the washer. A couple of weeks after this, however, I was summoned to the office, and confronted by the superintendent, who had on his face a look of mingled sternness and sorrow that would have been funny, had it not meant trouble for me. Seated by him was the president of the company, a kindly old gentleman, and standing in the further end of the office room was a man who looked to be the average rag-picker, a slouchy villainous figure, whose presence I wondered at and could not account for at the moment. I was not however long kept in doubt.

"Tom," said the superintendent, "I am sorry to hear that one of my men has been stealing and selling rubber. Do you know anything about it?"

"I don't know any more about it than you do," I said with some heat.

"Don't be impudent young man," said the president, his kindly face taking on a look of sternness.

The superintendent sighed with a martyr-like air, and said: "Tom, we don't wish to make any trouble for you, because you are a young man just starting in life, but we do not wish to keep you about the mill any longer."

"What have I done?" I inquired wrathfully.

"Perhaps we had better allow this man to tell his story," was his only reply, beckoning the slouching figure forward. Then that old rascal came forward and told, in dogged fashion, how I had brought rubber to him, and sold it for so much a pound, time after time, and how he had known nothing about its being wrong, until it so happened that he came to sell some of it back at the same mill; and then the superintendent asked where he got it and the whole story came out.

Before he was half through, I was edging toward the old villain, with the idea of throwing him out of the window, which he evidently appreciated, for he retreated behind the brass rail, and got close to the others for protection.

"Well, sir, what have you to say to this?" asked the president.

"Simply that its a lie from beginning to end; and you will find it out one of these days," I answered; "when I came here, I started working on the washer. I found rubber stowed under the floor close to it, and a trap door

by the side of the machine, that could be raised to hide it away. I told of this and the superintendent told me that he kept out a certain amount of it and substituted old rubber for it. I suppose you will without doubt, think that this statement is untrue; but you'll find the man out some time, and find him out a thief at that."

This statement made the real thief pretty angry, but he held his temper in, and simply reiterating his statement that he didn't wish to make trouble for me, and that he hoped that I would do better in some other place, discharged me.

The kindly old president, although he believed me guilty, followed me to the door and urged me to repent and acknowledge the error of my ways. He even followed me to the gate, and told me that if I would acknowledge what I had done, and promise to do so no more, he would reinstate me.

As I couldn't do this without lying, I was obliged to refuse his offer, and started off out into the village, again out of a situation and with very little appetite for rubber work of any sort. As is natural when a boy gets in trouble, I drifted home; and staying around there a couple of weeks, was so unfortunate as to fall heir through the death of an uncle to \$10,000, which in that time was a great deal of money. As far as I knew, the story of my discharge from the rubber factory had not reached the town that I lived in; yet I had that guilty feeling that so many innocent people have, when accused of anything. I had also a certain reckless feeling, that it didn't make much difference what happened to me then, so converting the most of my property into cash, I started out to see the world. From New York I went to England, and for two years travelled in a fashion that would have made my parents' eyes bulge with surprise and reproof. At the end of that time, I had exhausted nearly all of my money, and was forced to look about for employment. It was in England that I came to my senses; but unlike the Prodigal Son, I resolved to find a situation there rather than to seek my father's house and forgiveness. I therefore went to several rubber factories, and applied for work, but met the gruffest sort of treatment; and began to be somewhat discouraged. Finally I entered an office, and while waiting for the manager, picked up a piece of rubber that lay on the counter, and was examining it, when he came in.

"Well, young man, what do you want?" he said, with the characteristic discourtesy of the British business man.

"Work," I said briefly.

"So do hundreds of people that call here every day," he said. "Do you know anything about the rubber business?"

"I used to be a mill superintendent in America," was my reply.

"Well, what could you make that rubber that you hold in your hand for?" he inquired, looking sharply at me from under his bushy eyebrows.

"If I made it according to English ideas, it would cost about 50 cents a pound," I replied; "If I made it according to the latest American plan, it would be equally good and cost 30."

"Stuff and nonsense!" was his sharp answer.

"Will you let me try it?" I asked.

"I have half a mind to," he said meditatively; and then continued; "yes, I'll let you try it; maybe you've got Yankee faculty enough to suit my purpose; at any rate, I'll let you try it; if you succeed, I'll give you a good place; but if you fail, out you go. Report to me to-morrow morning at seven o'clock."

"Why can't I begin this afternoon?" I suggested.

He hesitated a minute, then replied, "Well, you can; take off your coat and come out in the mill."

Following him, I thus again entered the rubber business.

A Pen Picture of African Rubber Gatherers.

THE natives are in a very rude, uncivilized condition, and in everything "might is right." They have no currency, and do all business by bartering the native products for manufactured stuffs. Their wealth consists chiefly in the number of slaves they possess, who fish, hunt, and keep their plantations in good order.

When rubber has to be collected, from four to ten slaves get their flint muskets in order, each carrying, in addition, a long sword-shaped knife called a machete, a number of calabashes or jars to collect the juice of the rubber vine, and a little food that has been cured in smoke, as they can find plenty of sustenance in the bush without carrying it about with them from place to place.

The vines are in some cases near to the towns, but generally the natives have to go several days' journey into the bush before they can sit down and commence business. The vine itself is of a rough, knotty nature, about as thick as a man's arm, and grows to a length of fully two hundred feet. Its leaves are glossy, like those of the South American rubber tree, and a large fruit, much liked by the natives is gathered from it. I have tasted it, and found it very palatable, being slightly acid. This vine (what its scientific name is, I don't pretend to know) yields several grades of rubber, each of different commercial value, the best quality being taken from the highest part, and the poorest from the bottom.

With their knives, or machetes, the natives slash the vine in several places, and put broad leaves directly underneath the wounds for the juice to drop on, and being of a strong adhesive nature, none of it gets lost. When the top part of the vine is bled, calabashes, or jars, are placed with their openings to the wounds, so that none of it may drop on the branches of the tree, and so get lost; but it is not often they trouble themselves climbing, unless the vines happen to be scarce in the vicinity. The entire day they devote to cutting; next day they gather what was cut the day previous, and so on. Each evening, after collecting, they put all the juice they have into several iron pots or earthen vessels of native manufacture, and boil it; at the same time they can greatly improve the lowest quality by adding a little salt, and the more they boil the juice the better it becomes. When sufficiently boiled the water is poured off and the juice is allowed to cool, when it is fashioned according to the grade—ball, flake, mixed, or tongue—and is ready for the market. In this way about twenty or thirty pounds a day is collected. It is then taken to the factory, and there exchanged for guns, cloth, rum, etc. When it is received at the factory it is carefully marked, classed, weighed, and put into casks for shipment. It contains so much water that 20 per cent. is deducted from the weight of each cask, as that is about the amount of shrinkage on the voyage. This is, however, a loss to the native as it is deducted from him when selling.

This vine, from my personal observations, is to be found from Sierra Leone in the north to Vunsembo in the south, but along the coast line it is rapidly becoming extinct, as the natives are so careless or rapacious that in many cases they completely sever the vine, thus killing it instead of simply bleeding it. This has been pointed out to them times without number. They acknowledge their mistake, but are too careless or have not sufficient thought for the future, and so continue their (to them) ruinous method of cutting which is much to be regretted.

—Exchange.

Manaos.

MANAOS, 1060 miles up the Amazon is a small place of about 1000 inhabitants. The foreign population consists chiefly of the French and German elements. The houses are low cabins, and the accommodations for civilized sojourners are none of the best. An Englishman has a boarding house in the place and it is the favorite inn for transients. The forests come to the water's edge, and are a symbol of the wealth of the country. The town contrasts very unfavorably with Pará, in which the colored tiled roofed houses, the magnificent water front and the Belgian paved streets at once impress the traveller. In Manaos all large houses have a resident buyer who manages to simply exist in this unhealthy interior equatorial town.

A Defect in Rubber Tires.

ONE of the principal existing defects in rubber tires for bicycle wheels is the "riding-up-hill" peculiarity common to all of them; and the larger the surface the more pronounced is this drawback. Under the weight of the rider the tire is naturally flattened at the bearing point, while directly in front of this is a circular prominence which has to be flattened in its turn and the rider is constantly working with the pedals to overcome it. The pneumatic tire affords a partial compensation for this defect, but it is not complete. In a pneumatic tire the air is forced to the rear of the point of contact which causes a reaction and in a measure assists the rider; but it is large in size and in sticky soils gathers weight. The point of contact measures $1\frac{1}{2}$ inches in breadth and from four to six inches in length. Inventors are studying this peculiarity of the rubber tire, the effects of which are, as yet not completely comprehended.

Gum Arabic Superseded.

DOCTORS have inveighed against the dangerous gum which is used on some envelopes, and mishaps have been frequent as the result of damping the gum on envelopes with the tongue. All possibility of such accidents is removed by the automatic lock envelopes which have been patented. On the flap of the envelope are two projecting flanges, and all that is necessary to do to close the envelope is to fold these flanges by ready stamped lines, and insert the flap thus narrowed in a slot provided, whereupon the folded flanges automatically lock themselves in the slots, and the envelope cannot be opened without tearing it. The operation sounds much more complicated than it really is in practice, for one of these new envelopes can be closed as readily as the better known gummed envelopes. It seems remarkable that some inventive genius has not before seen the need and provided means for obviating the use of gum on envelopes. The process of licking now in vogue is both disagreeable and uncleanly and disgusting.

Letters to the Editor.

Wanted: A Position in America.

The following letter written in good German, comes to us in a recent mail from Germany.

EDITOR INDIA RUBBER WORLD:—

Allow an old subscriber of your esteemed journal to beg you to lend your assistance in regard to a fitting position. To give you an idea of my abilities, allow me to say, I am 29 years of age, single, possess the diploma of engineer-chemist, which I attained by examination in the branches technologic, chemico-technic analysis, chemistry, physics, mineralogy, and geology. In regard to my present position, for three years I have held the most prominent place in one of the largest firms in the rubber trade. In this capacity I have not only managed the manifold affairs of the house and made calculations, but also analyzed the samples and raw products that are laid before me. I am well acquainted with the manufacture of the following rubber goods: hose, belting, bicycle rims, erasive rubber, hard rubber goods of every description, diving apparatus, water-proof cloth for tents, gossamers, surgical instruments, etc. It would lead too far to mention every separate article; but I would like to say that I of course understand the necessary compounds, machines, and apparatus, and am especially well versed in vulcanization. Can also make brown rubber substitute, and utilize waste rubber remnants. This will give you a good idea of the kind of position that I am looking for. Although I still have a permanent place, I should like to settle in the real home of the rubber industry; and hope with your kind assistance to be able to accomplish my purpose. The English language I have studied thoroughly, although with not much opportunity to converse. References are at your disposal, and further information; also photograph if wanted. Address Y. S. B., INDIA RUBBER WORLD office, New York.

Books on India Rubber.

RIDDERKERK, HOLLAND, Feb. 9, 1891.

EDITOR INDIA RUBBER WORLD:—

Please send us THE INDIA RUBBER WORLD for one year. Will you also inform us if there appeared any new works on the subject of India rubber manufacturing this year, and if so, what is the best and latest? Awaiting your reply, we remain,

Very truly yours, BAKKER & ZOON.

[No works of any note that we are aware of have appeared in the United States during the year on India rubber. In fact, we have commented before upon the paucity of India rubber literature. The books that have been written, as a rule, are not such as will guide a manufacturer in his business as it is conducted to-day. Almost all of them have the appearance of being based upon the ordinary articles in the encyclopædia, to which is added a few interviews which are transcribed by some professional gentleman who knows nothing practically of the business and therefore makes unavoidable mistakes. We therefore can recommend no works at the moment of writing.—ED.]

Standard Measurements for Rubber Boots and Shoes.

EDITOR INDIA RUBBER WORLD:—

I desire to express my gratification to Bro. Kinne, President of the Retail Shoe Dealers Association for the move he is now starting regarding standard measurements in rubbers, as per your issue of March 15, 1891. I think this would be as great an improvement in rubber goods as it has proved to be in leather

goods and I hope it will come before the rubber manufacturers for their earnest consideration. If such measurements were adopted I think it goes without saying that everything else being equal, all retailers would give the preference to makers who manufacture rubbers according to the standards adopted.

Such a standard would prove a very great saving to retailers. Now customers come in with dirty shoes for rubbers and the dealer has possibly to try on five or six pairs before getting a nice fit. Those thus tried on become more or less soiled or damaged stock. Sometimes of course the first pair will fit, but many a time I have fitted rubbers marked 3½ on a 4 shoe, and quite often I have had to take a pair marked 5 to fit the same shoe. It may be said the shoes are not sized right, but I am very sure the trouble is in the rubber goods. Rubber boots as a rule fit like brogans, either too tight or too loose and baggy and fare much worse than the shoes. It is seldom possible to give a customer a good fitting rubber boot, and that works evil on the retailer, because the more a boot wrinkles the sooner it cracks and then the fun begins. The sooner this subject is considered by all interested the better. I hope president Kinne will be successful in securing to the retail trade the same uniformity in rubber goods as now exists in leather boots and shoes.

GEO. GREGORY.

Pittsburg, April 1, 1891.

The Wrong that Rubber Salesmen Do.

EDITOR INDIA RUBBER WORLD:—

I notice in the March issue of your valuable journal that you advocate the vulcanization of calendered rubber before it is made up into boots or shoes. Did you mean to do this or was it an oversight? Very truly,

M. B.

[If our friend will look carefully at the article in question, he will see that it was not THE INDIA RUBBER WORLD, nor any of its contributors, that hinted at such a thing as vulcanization before making up. The article in question was copied from a Western paper which contained an interview from a rubber shoe salesman. In quoting it we remarked in a brief prefatory note, that the article was inaccurate, and yet it was gossipy and readable and so like what many salesmen talk to their trade, and what their trade swallow as gospel, that we published it without extended comment. As far as we know, rubber shoes are always carefully made before being vulcanized. We would also beg to differ from the writer in his statement about the compounds used in rubber shoes, which are radically different from anything that we know of used in any rubber factory, in the United States at least; and we wish to say further that old boots and shoes are never gathered and ground into "rag carpet." What the young man meant by "rag carpet" was probably unvulcanized clippings that are ground up, rags and all, and used as he specified. But old rubber boots and shoes, as all manufacturers know, are made into either mechanical or chemical shoddy and used in heeling, soling, and many times in uppers. We make this explanation because several manufacturers, not reading the article carefully, seemed to take it as one endorsed by THE INDIA RUBBER WORLD.—ED.]

—A. G. Stevens, of Manchester, N. H., a prominent architect and civil engineer, is engaged upon the new factory of the Tyer Rubber Co., and will lay out for them about \$25,000 in new mill buildings. George S. Cole, of Andover, has been engaged to superintend the construction of the buildings.

Another Advocate of Uniform Sizes.

THE letter from the President of the National Association of Retail Shoe Dealers, advocating standard measurements in rubber boots and shoes, calls out the following interesting communication:

EDITOR INDIA RUBBER WORLD:—Every retail shoe dealer must be gratified to know that rubber boots and shoes may be made of uniform sizes and widths. Heretofore there has been greater diversity in sizes of rubber than were in leather boots and shoes, before the adoption of standard measurements.

Prominent among reasons for this is: first, want of complete understanding as to what particular measurements should be the standard of the N. M. F. W. WW. widths.

The greatest difference resulted from the fact that the wooden lasts were made in right dimensions for firsts, but the wood in many cases was not thoroughly dry and shrank after being turned. Of course the intention was to have it absolutely dry, but ever so dry a piece of timber when cut into smaller pieces and subjected to heat will shrink, and the greater the heat the more the shrinkage. Rubber boot and shoe manufacturers have informed me that this was a serious trouble which they were at a loss to remedy.

I can show croquet sandals made by the same factory, both marked F width, one of which will go over a shoe of its size easily, while the other is so small it fits very closely over a letter narrower. The manufacturer assures me this is occasioned by the larger pair being made over new lasts and the smaller one over lasts originally the same size but shrunken by use. It is impossible to make wooden lasts that will not shrink. Another reason for great difference in sizes is the fact that in use the lasts get much wear. If the new lasts are placed beside old ones much used it will be seen that the corners have been worn and chipped off the old, making them considerably smaller than when new.

Every dealer knows that an F. width on firsts is larger than an F. on seconds. This is occasioned by new lasts being used for firsts, and when more lasts are wanted those formerly used for firsts are replaced by new ones and the former lot used for seconds, and after a time they are transferred to thirds. This is the principal reason thirds are not in as good shape as firsts. If metal lasts were used this could all be avoided, and there would be no perceptible change in size either from temperature or wear. The objection of additional weight can be obviated by making the lasts hollow, and as no great strength is required the shells could be quite thin.

The most perfect lasts for leather shoes I ever saw were metal, and their weight was but little more than wood. The rubber boot and shoe manufactory first using metal lasts, thereby gaining uniformity in dimensions, will have gained popular favor such as no factory using wooden lasts can.

Yours truly,

I. B. ARNOLD

FINDLAY, OHIO.

EDITOR INDIA RUBBER WORLD:—Is it true that India rubber is used in the manufacture of chewing gum?

Very truly,

G. A NEW ENGLAND GIRL.

[A species of India rubber, or what is more like a sort of gutta percha, is used in chewing gum, and is the product of a Mexican tree known as Chicle-chicle. This really could be used in rubber manufacture were it not for the fact that its price has gone from something like fifteen cents a pound to fifty, and that some of the cheaper grades of gum which cannot be used for chewing gum will answer the purpose of the rubber manufacturer just as well.—ED.]

Recent Rubber Patents.

No. 441,808.—Machine for Covering Wires, Cables, etc., and for Making Tubing and Cord; Vernon Royle and John Royle, Jr., Patterson, N. J.

No. 441,820.—Tire for Vehicle Wheels; Joseph E Bromley, Chicago, Ill., and Alexander Straus, New York. An elastic tire for vehicle wheels composed of an interior body or core of cork inclosed and retained within a covering of canvas or other suitable material, and an exterior of rubber molded or vulcanized about the core.

No. 442,155.—Insulating Covering for Pincher Handles; George F. Virtue, Boston, Mass. An insulating cover to be applied generally to pincher handles consisting of a rubber tube shaped with a taper to adapt it to the ordinary form of handle and provided with one thin side by which the wear comes upon the part having the least tension.

No. 442,236.—Flexible Covering for Stair Treads, George Nash, London, England. Improved elastic coverings for stair treads, gangways, and the like, formed of rows of elastic blocks flanged at two sides and placed in direct contact at their unflanged sides, such rows being held in place by suitable metal strips.

No. 442,335.—Process of Treating Asbestos; Isaiah L. Roberts, Brooklyn. Process of preparing asbestos for electrical diaphragms, which consists in exposing asbestos board or cloth to the action of an acid, then washing out the soluble parts, then compressing it.

No. 442,393.—Tire for Velocipedes; William Richwine, Philadelphia, Pa. A tire consisting of a tube with a pocketed bed and balls therein, the balls resting in the said bed.

No. 442,626.—Mat for Bar Wash-Basins; Joseph T. Keane, Chicago. As an improvement in mats for bar wash-basins, for washing drinking-glasses, the rubber mat provided with an inclined flange and centrally arched to present a soft yielding surface to the glasses as therein deposited.

No. 442,627.—Clasp for Overshoes; Harry J. Kistler, Oakland Cross Roads, Pa. A clasp comprising opposite separable ankle-embracing arms adapted at their rear for connection with an overshoe, and provided with means for securing the arms in a closed position.

No. 442,798.—Shoe Attachment; Thomas F. Byrnes, Emporia, Kan. A shoe provided with a strip of suitable material applied vertically to the inner side of the counter well down on the heel line, and having its ends firmly secured between the lining and the adjacent portion of the counter, thereby forming a loop for use in combination with a fastening band or string.

No. 442,948.—Tire for Velocipedes; Arthur S. Bowley, London, England, assignor to the Overman Wheel Co., Chicopee Falls, Mass. A yielding hollow tire with an air pump arranged to be automatically operated by motion derived from the inward displacement of the tire under pressure.

No. 442,989.—Door-Check; Thomas D. Morris, Seward, Neb. A spring-plate secured on its lower outer corner and pivotally provided with a rectangular frame, having rollers covered with rubber bearing against the floor and the door.

No. 443,013.—Pendent handle; Friend W. Smith, Bridgeport, Conn., assignor to the Smith & Egge Manufacturing Co. In a pendent handle, the combination of a spherical rubber body having a perforation therethrough, the metallic caps at the top and bottom of said body, and a screw and elongated nut extending through said caps and within said body and adapted to engage with each other to secure the parts of the handle.

- No. 443,036.—Base-Ball Curver; Joseph H. Burns, Cleveland, Ohio. A baseball curver consisting of a segment of a sphere adapted to receive a section of the ball and a flexible thumb loop in one end connected with the segment.
- No. 443,123.—Sole-Cutting Machine; Allison M. Stickney, Medford, assignor to the Wellman Sole-Cutting Machine Co., of Boston, Mass. This is a perfected machine for cutting rubber soles with skived edges, a travelling knife-block being run about the forms following exactly the outline of the article to be cut and held at any angle desired.
- No. 443,497.—High-Resistance Compound; William G. Bremer, St. Louis, Mo., assignor to the United Electric Improvement Co., Gloucester City, N. J. A compound, consisting of graphite and shellac for resistance purposes.
- No. 443,536.—Art and Means for Covering and Insulating Wire; Thomas W. Norman, Boston, Mass. This consists in treating the insulating wire so as to render it proof against being burned or damaged by a few seconds contact with molten metal, passing the same centrally through a chilling mould and pouring the molten metal around the insulating-wire treated as aforesaid.
- No. 443,545.—Device for Injecting Medical Powders; William H. Rowland, Albany, Oregon. In an atomizer, the combination with an elastic bulb reduced at one end to form a neck, the wall of which is thickened, of a removable metallic tube mounted in the neck, provided with a conical bore and at its inner end with a hemispherical head taking in rear of the thickened wall, with a circular milled disk beyond the neck and provided with external threads, the washer encircling the tubes at the base of the threads and in front of the disk, and the internally-threaded cap taking over the front end of the tube.
- No. 443,565.—High-Resistance Compound; William G. Bremer, St. Louis, Mo., assignor to the United Electric Improvement Co., of Gloucester City, N. J. A homogeneous high resistance composition consisting of rubber, shellac and graphite, or rubber, sulphate of baryta, graphite and shellac.
- No. 443,613.—Rubber Eraser; Arden S. Fitch, New York, N. Y. In a rubber eraser, the combination with a semicircular sheath which is closed at its curved and open at its straight edges, of a corresponding semicircular rubber erasing-piece adapted to fit within and be inclosed by the said sheath, pivotally united at the centre of its straight edge to and between the straight edges of the sheath at the centre thereof.
- No. 443,614.—Method of Utilizing Rubber for Erasive Purposes; William Friend, New York. A method of utilizing India rubber for erasive purposes, which consists in creating a condition of substantially uniform tension throughout the entire mass of the rubber and uniformly supporting and permanently holding in its said tense condition said rubber mass throughout its entire area fixedly by and upon a rigid foundation.
- No. 443,615.—Rubber Eraser; William Friend, New York. In a rubber eraser, the combination, with a rigid disk or plate provided at its circumferential edge with a continuous encircling flange, of a rubber jacket which is centrally apertured transversely and is of normally less diameter than the flange disk or plate, and which is adapted to correspond and fit to and is mounted upon the edge flange of said disk or plate in a uniformly distended and tensioned condition.
- No. 443,616.—Rubber Eraser; William Friend, New York. A rubber eraser which is chambered and is provided with apertures, singly or in series, in a wall of said chamber and communicating from said chamber to the exterior of the eraser-body, together with a textile or erasive material enclosed in said chamber.
- No. 443,617.—Rubber Eraser; William Friend, New York. A rubber eraser composed of a chambered block or holder provided with apertures, one or more, in a wall of said chamber and communicating from said chamber with the exterior of the block, and a piece of India rubber mounted upon the block.
- No. 443,735.—Rim and Rubber Tire for Vehicle Wheels; Charles E. W. Woodward, Chicopee Falls, Mass., assignor to the Overman Wheel Company. A rubber tire arch shaped in cross section having its sides adapted to take an end-wise bearing substantially in the plane of the wheel and provided with one or more interior supporting ribs.
- No. 443,826.—Harness Pad; William K. Edgington, Olathe, Kan. A harness pad consisting of a spring rubber core having a longitudinal concave groove tapering in the direction of its cross section inward and flaring outward at its open side, said core being directly incased by a leather covering placed immediately next to the core.
- No. 443,859.—Return Ball; Hosea W. Libbey, Boston, Mass. In combination with a handle, an elastic cord, a ball, a spur, and a thimble for protecting the point of the spur when not in use.
- No. 443,937.—Attachment for Inkstands; Barclay M. Everson, Pittsburg, Pa. An attachment for inkstands consisting of a reversible stopper formed of rubber, having a thick lower annular portion which is provided with a vertical wall, and a thin flexible central diaphragm whereby the stopper may be placed inside or outside the mouth of the bottle or the thickened portion turned above or below the diaphragm, and a tube passing through the diaphragm.
- No. 443,971.—Bottle Stopper; Michael J. McHugh, Jersey City, N. J. An improved bottle stopper, consisting of the body part or main section having in its lower end a socket, and provided at the upper end of the socket with an enlarged opening, and the packing section having a disk and stem, the stem being of even diameter throughout and of greater diameter than the socket, whereby when the stem is forced in the socket it will expand in the enlarged opening above the socket.

A Unique Advertisement.

QUITE an imposing box comes to us in a recent mail, which being opened shows a quantity of pink cotton batting, in which is something that looks for all the world like a newly laid egg, which reposes quietly under the batting, and upon an ingeniously constructed nest. As this came at Easter time, one would assume that the Easter greeting was a veritable egg, had it not been for its extreme lightness, which suggested that it lacked the interior furnishings of the regulation hen's egg. A card, however, instructed us to crack the shell, which showed a yellow circular, that gave the surprising information that 399 years ago Christopher Columbus illustrated the discovery of America by an egg; and that at the present time, the Mason Regulator Co. employ an egg to call attention to the fact that the greatest discoveries since the time of Columbus have been the reducing valves, air brake regulators and damper regulators manufactured by the Mason Regulator Co., of Boston, Mass.

Advantages of Rubber-Soled Shoes.

IN winter delicate people must be well shod for changing seasons. Before the need of warmer clothing is felt, the damp chill striking through the feet is felt through limbs and body, stiffening the chords and the gait, fostering a general ache of the muscles, which tends to anything but cheerfulness of feeling. What is to be done?

The safe thing is to have a rubber-soled shoe, which leaves the upper part of the foot dry and free to the air. I never expect to see again the eminently sensible walking shoe which appeared in Boston shops six years since, which had a rubber sole inlaid on the tread, which was the most elastic, comfortable shoe for country walks, gardening and snowy days one could ask. There were no "rheumatics," from digging in flower borders or facing damp October walks with those boots, I promise you. The trouble was they were too good, (that one pair isn't worn out to this day) and so they were taken out of sale for the benefit of poorer stock. But one can have a sole cut out of thin, pure rubber, and cemented to a thin boot for fifty or seventy-five cents a pair, and save endless internal troubles from cold feet. Do you know how much easier living is with feet duly shod with elastic soles? The ease of getting about on them takes a third of one's weight off. Who can estimate the relief to back, sinews, and leg-muscles?

All drivers know that city streets and pavements wear out the feet and strength of horses far sooner than the country roads. Are pavements and floors any kinder to women? I don't believe any one who reads ever thought about it, but the constant stepping about nonelastic floors and sidewalks must wear greatly on the limited strength of a woman. Earth gives, the mountain sod is elastic, the woodland, the grassy turf yields, thus saving the foot which treads them.

Tiles, marble, stone, cement, oil-cloth do not give way, and all impact of the tread returns upon the muscles and nerves in a cruel way. This constant jarring, unnoticed at first, works strange mischief in women's organisms, and the cause is seldom suspected. Wood floors and sole leather heels are elastic beside stone pavements and metal heels, but not sufficiently so. One feels the difference very soon in climbing iron or stone stairways which take the life out of humanity.

But to know the luxury of footing, and how much relief is possible to the strain of life, never dreamed of, one should put on the new shoes with elastic seam. It is just a little thing, an eighth of an inch or less of pure rubber, let in at the ball of the foot, between sole and upper, detracting nothing from the fit of as shapely shoes as are sold, but making all the difference of ease and springy step, and taking the strain off so many painful muscles. Housekeepers, clerks, car drivers and floor walkers know what it is to feel that every step drives the heel into a socket of sore flesh about the ankle, and that again sends the bone of the upper leg against the hip-socket with a jar that tells painfully on the sore and quivering flesh of the front and back muscles of the trunk. I am not writing anatomically so much as telling how walking feels on unelastic floors and pavements, though of inlaid woods, marble, or Minton tiles. There's a deal of suffering in mute endurance in our costly thoroughfares. Mute because no one can pity who has not felt the pain. I knew it and have known it year after year, and can appreciate the relief, the saving of muscles which these rubber additions to the sole afford.

This is not the latest improvement in foot gear I have to tell of. Have you ever noticed the accidents which happen on the marble and inlaid floors and shops as well as on slippery ice? There is not a day that people do not measure their length on

the smooth marble, or slip and bring up with a strain that wrenches every ligament of their bodies. Add to this the dreadful slipping of heels worn smooth on the edges of steps or thresholds with shock and wrench, and you have quite a list of risk to run before the ice sets in with its dangers to life and limb.

There is a ladies' coffee room I know, whose marble floor is a nervous horror to customers, with its slippery surface, and I have had so many shocks of the sort with lasting injury, that seeing the sign of "Rubber Safety Heels" in a basement shop-window, I dived for them at once. The invention is a block of pure flexible rubber let into the heel so as to save the wear of leather, slipping, and jar of spine. Though a dollar for a pair of heels seems rather an addition to the cost of shoes, persons obliged to be close economists, find nothing so well worth the money, hardly more for the safety than the spinal relief in walking.

Dr. Bowditch, of Boston, as widely and well known as any physician in this country, is quoted as saying half the spine diseases he meets is caused or aggravated by high, hard heels, and he has given the rubber heel his emphatic commendation. With all possible respect to the doctor, however, those who try the rubber attachment to shoes need no other commendation than their own much relieved spines.—*Quebec Chronicle*.

Rubber Foot Fever.

SINCE the streets became so muddy I have had a number of sufferers apply to me for relief, said a chiropodist to a St. Louis *Globe-Democrat* reporter.

If a man has a corn I can take it out and relieve him, but if he is suffering from what I call rubber fever, I can't help him, and can only prescribe liberal foot bathing and a removal of the cause of the trouble.

Rubbers should only be worn to keep wet out, and they should be removed the moment the wearer gets indoors. Failure to note this gives a man wet feet in a far worse sense than if he had waded through mud ankle deep.

It was the trouble resulting from forcing the perspiration to soak the stockings and keep the feet perpetually damp that drove rubber soled boots out of the market.

Even loose rubbers are a source of danger and the cause of many more serious colds than they avert.

Not a Total Loss.

NO wonder, in that mud and slush,
That sticky, snowy, sloppy mush,
That she should mention with a blush
That she had lost her rubber;
Or that I bending to replace
The slender, fragile little case,
Should show a woeful lack of grace
And prove a very lubber.

Since I have seen that wondrous sight—
Her tiny foot, her ankle slight—
I know why maidens in despite
Are half inclined to snub her;
And with deep guile I take her out,
When every cloud's a water-spout,
And breathe a silent wish devout
That she may lose her rubber.

—*Town Topics*.

A Handsome Rubber Store.

ANY one accustomed to the appearance of the old-fashioned retail rubber store, will upon entering the new store of the Metropolitan Rubber Co., in Boston, find it difficult to persuade himself that he has not made a mistake, so thoroughly has it been established upon the theory that the rubber business is susceptible of as attractive setting as any other line of trade.

In the first place, the sign running across the front of the store is exceedingly attractive. It is formed of large black script upon a background of gold. The large show window, instead of being littered with unsalable odds and ends as is too often the case, is as handsomely arranged with a fine display of clothing, shoes and sundries, as the most artistic window in any dry goods store in town. An enormous rubber mat at the entrance, into which is worked the name of the company, calls attention to the character of the business done within.

But the most striking effect is received on opening the door. A spacious room, with high, handsome ceilings, carpeted with the richest of Wilton rugs, the sides finished in polished oak, ornamented with plate mirrors, a massive table of carved oak in the centre of the room, with oak chairs to match, form a most pleasing *ensemble*. Were it not for the rows of garments hanging in their proper compartments, one would easily imagine himself in the drawing-room of a hotel of the better sort. There is no odor of rubber, nor is there any rubber immediately in sight; though this comes to view on investigation. At the right of the door hangs a long row of men's mackintoshes, suspended from a suitable frame.

Along the wall at the left runs an extended wardrobe, divided into compartments, in which hang various garments for women, as tastefully arranged, and making quite as handsome an appearance, as the lines of rich fur garments to be seen in any furrier's. In fact, the whole arrangement of this store is exactly in keeping with the parlors of the leading furriers. The first compartment on the left contains a variety of handsome silk circulars; some of them of the richest brocade pattern. In the next compartment hangs a line of garments with a woolen exterior finish, many of them having a silk lining. There are altogether about 200 different patterns of mackintoshes for women, including all the different styles.

The different compartments in this long wardrobe are separated by plate glass mirrors, of which there are altogether some seven in number, reaching to the floor and enabling one to see the whole figure. The large number of these mirrors prevents all necessity for one customer to wait for another while viewing herself in the glass. In fact, there is about the whole store that pleasant sense of plenty of room, too often missing in rubber stores.

Beyond the lines of women's garments, is the stock of rubber foot wear. This stock is kept in boxes upon shelves, and the heavier goods in drawers underneath. A noteworthy feature of these drawers is, that they are all worked upon castors, so that notwithstanding their weight, they are drawn out and pushed back with the greatest ease.

On the opposite side of the store, about the middle of the right wall, is a large show case, containing with the shelves behind, a great variety of small rubber goods, such as combs, gloves and mittens; all kinds of air goods, rubber toys in great variety, balls, small and large; bands, brushes, erasers, small mats, and all kinds of druggists' rubber goods. This display, while confined within a small area, is comprehensive, neat and attractive.

Just back of this are the offices; built of the same polished oak in which the whole store is finished, except the glass parti-

tions. The first office is that of the manager, Mr. E. E. Leach, well known to members of the rubber trade, from his long association of thirteen years with the American Rubber Co. of this city. In the second office, connected with the first by means of a door and a sliding window, and separated from it only by a glass partition, is the office of the book-keeper. These two offices, as in fact the whole store, upstairs and down, are lighted by electricity.

In the extreme back of the store, looking out toward Chauncy Street, is the wholesale department; which, while in the same room, is so far removed from the retail department in front as to be entirely separate. Here by excellent arrangement, there are placed on exhibition in a comparatively small space, samples of all the work of the Metropolitan Rubber Co.; and here are conveniences for the three New England travelling men, whenever they are at the home office.

The shipping department is in the basement; which, like the floor above, is lighted with electricity, and has at the rear an electrical elevator carrying goods immediately out on Chauncy Street, obviating all necessity of passing through the store. The shipping department is arranged in a long series of counters, at right angles with the wall, and these counters are divided into different compartments or bins, into which are put the different sizes of the various garments; each counter being devoted to the same character of garment, and each bin to its respective size. Over these compartments are stored the boxed goods; and everything is so perfectly arranged and so well ordered that the shipper could easily send off a large and varied invoice of goods without mistake, and do it in the dark.

Boston's Shoe Bill.

A WRITER, in a recent edition of a Boston daily, estimated that the city of Boston had expended nearly a half million dollars to keep its feet in rubbers during the present season. He devotes nearly a column to a detailed computation; estimating that out of a population of 450,000, one hundred thousand men have spent about \$140,000, one hundred thousand women about the same, and that one hundred thousand children have not been far behind in their expenditure for overshoes. How far the writer is correct, it may be difficult to hazard a guess; but it is hardly possible that he is far out of the way. While \$420,000 is no trifle to be expended simply to keep the feet of one small city dry through a single season, it must be kept in mind that Boston feet need to be kept dry through the greater part of the winter; for Boston has a climate,—fortunately for the rest of the country,—truly its own; and the winter day when the Bostonian ventures forth in the morning without a pair of rubbers either on his feet, or at the office or otherwise easily accessible, is likely to be a sad one in his experience.

ACCORDING to the *Gummi Zeitung*, a Spaniard from Barcelona has invented and patented a glove which promises to be of much value to swimmers. He interposes between the fingers of the glove an elastic rubber web which acts in the same manner as the web on the feet of aquatic birds, giving a much broader surface for resistance than is attainable with the naked hand, and thus greatly accelerating the speed of the swimmer. In a later issue of the same journal it is stated that the idea had already been patented in Germany a year ago and the gloves put on the market.

THE "Alice" rubber mill shut down recently for a week to take an account of stock. It was started up again Monday, April 6.

Rubber Varnish.*

IN order to obtain a perfectly clear rubber varnish, it is absolutely necessary, according to Paul Lehmann, that the rubber be entirely free from water. This can be obtained by cutting the rubber into thin slices, or better into threads, and drying these for several days continuously at a temperature of 40° to 50° centigrade (100° to 122° Fahr.). This material when so prepared is more easily acted upon by the solvent. The following formulas can be recommended:

I. Dissolve one part of well-dried rubber in eight parts of petroleum oil and mix the solution with two parts of fat copal varnish.

II. Pour one part of ether over two parts of well-dried rubber, allow to stand several days, until the rubber is thoroughly soaked, then liquefy the mass by careful heating in warm water, and while still warm mix with it two parts of linseed oil, and finally add two parts of turpentine oil.

III. Melt two parts of rosin or dammar, and add to the melted mass one part of fine cut rubber, then warm for some time, stirring constantly and finally add two parts of hot linseed oil.

IV. Pour four parts of turpentine oil over one part of rubber, allow to stand two days, add four more parts of turpentine oil and warm until dissolved. To this add twelve parts of copal varnish and six parts of linseed oil varnish, and mix the whole by the heat of a water bath.

V. Almost colorless solutions of rubber can be obtained by soaking the gum in carbon bisulphide. Pour two parts of carbon bisulphide over one part of rubber and allow to stand until a uniform jelly is produced. To this add benzene which will dissolve nearly all of it. The carbon bisulphide can then be distilled off in a water bath.

The Battle of Tires.

SOME bicycle men are advertising that their particular rubber tires will float, and therefore are good; others, that the ones they make will *not* float, and consequently will wear longer.

The "float" champion relies upon his rubber being the fine Pará without excessive adulteration. This will admit of great heat in vulcanization so that the sulphur can be bloomed out. Cushion tires often crack in the interior, but with good rubber and skill in manufacture this contingency can be long delayed. But quality of rubber and skill in manufacture must be present. Poor rubber will float, as the English Government found out after they had made the buoyant test a decisive one in the manufacture of valves. A Massachusetts manufacturer of bicycles says his rubber is red, will sink, and will beat the grey in wearing qualities two to one. He maintains that his rubber is vulcanized with antimony, to which the red color is due, and there is nothing wrong about that.

Again, antimony can be used in inferior rubber to better advantage than sulphur. The test of rubber is a difficult one—almost unobtainable except by analysis and in actual wear and tear. The jealously guarded secrets of the rubber factory are many. Excessive and cheap adulterations are by no means uncommon. The statement that a specific tire *will* float, appeals only to the ignorance of laymen as the 100,000 bicycle riders, more or less, in this country will be likely to find by experience. Rubber men like the bluish grey tinge that is seen in fine Pará manufactured goods, but whether the tire is grey or red, will float or sink, is a test sure some time

to be found fallacious. Such tests ought, therefore, to be abandoned for something more definite and conclusive.

Across The Line.

A CANADIAN paper says: "It was stated lately by one of the employés of the Canadian Rubber Company that about 175 females and 75 male employés of that company had been notified that their services would not be longer required, owing to the slackness of trade. Enquiries at the company's office led to a statement being made that the reason for this wholesale discharge was that the company wished to reduce its stock. One of the wings of the factory will be closed down. Some of those who have been notified that their services are to be dispensed with declare that if they had known what was so soon coming they would have voted against Mr. Lepine and for the Liberal party. But, in common with many others, they were led to believe that if they voted against Sir John Macdonald, and if the Liberals got into power, there would be a closing down of the factories and an era of starvation to face. Their votes apparently went for nothing."

Another paper commenting on this says: "The Canadian Rubber Company emphatically denies the statement published in the *Witness*, to the effect that some 250 of their employés had been discharged, not over a dozen have been discharged, and no women."

A Curious Phenomenon in Elasticity.

IF a strip of gum rubber be heated, then expanded and quickly wound round and round upon a metal tube or wire, and then cooled for a short time in cooling mixture, it immediately loses all of its elasticity and has no tendency to contract. If, however, it is then put into hot water, it at once regains its elasticity and returns to its original length. Another way of observing this same phenomenon is to hold the heated rubber a second in an expanded condition when unvulcanized, when it will retain its shape. If, however, it is now immersed in hot water, it contracts to one-fourth or one-fifth of this length, and will remain contracted to one-third or one-fourth of its original length. These are what may be called the secondary effects of elasticity.

Cushioned Axles for Vehicles.

MOST trotting sulkies and wagons have cushioned axles, and those who own and drive them are undoubtedly well posted as to those most easy both to horse and driver. To summarize the advantages of rubber for cushioning axles, upon which it would be very possible to dwell at considerable length and with force, we only give the results of experience when we say that it reduces wear and tear to a minimum, lessens jolting and vibration, diminishes noise, and decreases the dead weight of the load, making the traction easier upon the horse. Carriage makers admit this, and many of them—though somewhat against their own interests—recommend rubber axle cushions because they prevent hubs and spokes splitting, and hinder in a great measure the breaking of rims and tires. Rubber cushioned axles also insure a more uniform revolution of the wheels and obviate much of that almost interminable greasing which, though it does much to secure smooth and noiseless motion, injures the wooden spokes and hubs. To conclude, we may add that rubber cushioned axles secure a diminished strain upon that important article, the harness, and thus lessen the saddler's bills; while they supplement the action of the ordinary steel-springs, making riding a luxury even to the public.

* Translated from the *Drogisten Zeitung* for THE INDIA RUBBER WORLD.

Trade Notes.

THE American Rubber Company's works at Cambridgeport, Mass., came near being destroyed by fire quite lately and were it not for the strenuous efforts of the firemen to check the progress of the flames a serious conflagration might have resulted. No cause can be assigned for the origin of the fire, and the damage, principally to stock and tools, did not exceed \$1800.

—It is said that imitation is the sincerest form of flattery; at the same time, business houses are not particularly anxious to have their bright ideas counterfeited when it means to them a certain loss of trade. We publish in this issue of the WORLD a cautionary circular from the Peerless Rubber Mfg. Co. which speaks for itself. The rainbow packing, by the way, which the Peerless Co. manufacture, has proved a grand success; so much so that the manufacturers are turning out more than three tons daily; and have orders ahead sufficient to run them for six months to come. Just who the counterfeiting sinners are does not appear; but the Peerless people seem emphatic in their statement that it is well for them to beware.

—The Almy Water Tube Boiler Co., of Providence, R. I., have been awarded the contract for the boiler in the U. S. Gov. boat, *Stiletto*. The boiler is to be a 450 horse-power, and it is calculated that it will effect a saving of over 13 per cent. in fuel from what the ordinary boiler can do.

—A Michigan paper says with infinite wisdom, "The talk about old rubber being used in the manufacture of chewing gum appears to be no joke, as a carload of the stuff was recently shipped to one of the largest gum factories in the country." A statement like this is likely to do a deal of harm, as it strikes at the root of a great industry and will undoubtedly injure the appetite and enjoyment of scores of happy school girls.

—The Colchester Rubber Co., of Colchester, Conn., are enlarging their offices and hiring additional office help.

—The fine plant of the Saratoga Rubber Co., at Saratoga Springs, N. Y., which for a number of years was successfully run on ladies' gossamers, is about to be sold to a company from North Hoosick, and will be turned into a shirt factory.

—An exceedingly unique and beautiful circular comes to us in this morning's mail. The texture of the paper upon which it is printed is so fine and translucent that it reminds one of a sheet of the finest, whitest gutta percha tissue. No doubt this was the thought of the one who designed the circular, for it comes from the U. S. Gutta Percha Paint Co., of Providence, and speaks convincingly of the advantages and uses of their famous paint. To business men who are looking for novelties in the way of circulars we would give this bit of advice: get one of these and send some of your own printed matter in this shape, as it is sure to attract attention.

—The Barney Ventilating Fan Co. is the new name of a concern that has long been before the public under the name of the National Ventilating Co., of 68 Pearl Street, Boston. They send out a very neat eight-page booklet, giving some valuable information about ventilation, drying, waste heat and kindred topics, and show excellent cuts of their compound scoop wheel, which is now engaging the attention of many rubber manufacturers.

—The firm of Wilson & Knox, of Buffalo, N. Y., manufacturers of rubber goods, have dissolved partnership, Mr. Knox retiring.

—Machines for making tennis tops have been put up at the rubber mill in Colchester, Conn., and the tops, which have been imported ready made for the past year, will soon be manufactured in this mill.

—A tiny fawn-colored pamphlet that can almost be carried in the vest pocket bears the title: "Illustrated Circular of Tyrian Atomizers." This little book is devoted entirely to a description of the various atomizers made by the Tyer Rubber Co., Andover, Mass. The page following the title page shows the Tyrian trade mark, while opposite that is a brief prefatory note introducing the variety of styles which are: the Tourists' No. 4, Tyrian No. 7, Tyrian No. 11, No. 15, No. 18, No. 20, 22, 25, closing with the hard rubber atomizer known as the Dragon. This circular will be appreciated by the trade, and if not received should be sent for.

—During the last few years many valuable inventions have been made in the line of steam pump appliances. Of these perhaps Mr. Chas. D. Bosworth, Boston, has brought out the most practical and valuable. His work has been wonderfully appreciated by owners of well-equipped steam plants, as he has succeeded in economizing fuel to a marked degree. Of the new inventions that he has produced, we hope through the courtesy of the Crosby Steam Gauge and Valve Co. to keep our readers posted from time to time, and if through the pressure upon our columns we are obliged to make some of these articles brief, we trust that those of our readers who are interested will apply to the company mentioned for the fuller information which they will cheerfully give.

—In the show-case of a Providence photographer is to be seen a very handsome photograph of the well-known engine builder, Mr. Wm. A. Harris, of Harris-Corliss fame. It is surprising how many of the passers-by recognize the picture and seem to know the man.

—The Rubber Shoddy Mill, at Titusville, N. J., has started up for the season, and they are running day and night to keep up with their orders.

—Says the *Meriden Journal*: "Counting their plant and the stock of goods on hand, the Metropolitan Rubber Company must now represent not far from \$300,000 in valuation at their site west of the railroad in Wallingford."

—The opening of the annex to Haskell & Tripp's store in New Bedford, Mass., was well attended. The store is 86 feet long and 28 feet wide. The shoe department on the east side covers three-quarters of the length of the store and is most tastefully arranged. A decided novelty is a handsome Brazilian rubber plant with the latest styles of genuine rubbers for its fruit. Every shoe bears the name of Haskell & Tripp.

—Mr. B. F. Pennington, formerly of the Anchor Rubber Company, has taken charge of the Standard Rubber Works at Brockton, Mass. Mr. Pennington will reside in Plymouth, about 30 miles from the factory.

—The Union Rubber Cement Company, of Newark, N. J., have recorded articles of incorporation, the incorporators being Frederic H. Crary, East Orange; Charles C. Thomas, Jersey City, and George S. Mallory, Jersey City. The new company will manufacture cement, glue and extracts in Newark, N. J., on a capital of \$66,000, of which \$33,000 has been paid in.

—The new machinery for the Jonesboro, Ind., rubber factory is expected to arrive from the East immediately. As soon as possible the plant will be put in operation, and then Jonesboro can declare her boom as fairly on.

—Eugene H. Clapp, of Hanover, Mass., will make large additions to his rubber mill this spring. A building 60x40 feet on the Pembroke side, and one 80x40 on the Hanover side will be erected.

—Mr. John F. Carter, of Beverly, Mass., manufacturer of oiled clothing, has taken his son, George H. Carter, into the business, which will hereafter be conducted under the firm name of John F. Carter & Co.

—John H. Flint, treasurer of the Tyer Rubber Co., has gone to Lakewood, N. J., with his family, for a winter vacation of a couple of weeks.

—The National India Rubber Co. were recently furnished with four 125 horse-power boilers by the Roberts Iron Works Co., of Cambridgeport, Mass. The boilers are high-pressure boilers and made particularly for vulcanizing purposes.

—George H. Hood, of the Boston Rubber Co., is back from his vacation to Cuba, and is much improved in health. This trip, by the way, is the first Mr. Hood has taken for a long time and he feels hopeful that it will be the means of giving him renewed vigor for his business.

—The old-fashioned metal jackstone that the youngsters seem to appreciate and spend so much time over, bids fair to be superseded by a jackstone made of rubber, which they use just as enthusiastically as ever they did the metal one.

—A plant for the manufacture and sale of rubber stamps, rubber type, dating machines, pencils, stencils, check protectors, ink, ink pads and novelties, has been established in Fort Wayne, Ind., in connection with the *News* office.

—C. M. Clapp & Co., of Boston, who own the Aetna Rubber Mills and who for years have had a store situated between Arch and Devonshire streets, with a frontage on each, will soon move a little nearer to the centre of the rubber field. The new location will be in Winthrop Square, close to the offices of the Boston Rubber Co.

—The Brown & Sharpe Mfg. Co., of Providence, whose tools are in use in so many of the rubber mills the world over, are to erect a building 100x60 feet, to be devoted to small tools for especially accurate measurements.

—The store of Selly Jacobson, doing business under the name of the Royal Rubber Comb Company, at 309 Church Street, New York, was closed by the sheriff recently on an execution for \$13,984 in favor of Jane Jacobson, for money loaned. He has been in his present business several years, claimed a capital of \$33,000, and was formerly of S. Jacobson & Co., dealers in stationers' specialties, who made an assignment in 1885. The liabilities are about \$35,000, and the failure was caused by indorsing notes of a Mr. Philips of London.

—The Bijou Theatre building in Portland, Maine, is to be remodelled into a store, and has been leased to the Hall Rubber Co., who will occupy it with their business about the first of May.

—The following news comes from Reading, Mass. Mr. James Hamilton, superintendent of the Massachusetts Rubber Company, says it is doing a fine business and constantly adding more help. We hear that the Reading Rubber Company is manufacturing large quantities of mackintosh cloth, and much of it is made up right on the grounds.

—Mr. J. H. Parker, of Boston, well known as the manufacturer of Parker's Rubber-Upper Leather-Soled boot, has just returned from a visit to Lakewood, New Jersey.

—Speaking of rubber tires, the English held this trade so long as the big wheels were in vogue as they were two or three years ago. But the safeties and narrow-tired wheels required smaller moulds and made it possible for all hands to dip in and get a share of the trade. Then, of course, poor tires came to the front and shoddy wheels are quite common. A good Pará tire is about as long lived as the bicycle itself.

—The Derby Rubber Co. have received a ninety horse-power boiler which will be placed in the new portion of their works. The walls of the new shop are being rapidly pushed forward and by the time the water is in the canal the company hope to have their entire plant in order for immediate resumption of business.

—Articles of incorporation have been filed in the office of the County Clerk in Elizabeth, N. J., by the Vendome Rubber Company; the incorporators are Edmond A. St. John and Ellen A. St. John of Brooklyn, N. Y., William L. Bones, New York City, and Charles S. Bloomfield, Jselin, N. J. The object of the company is to manufacture and sell rubber clothing and other specialties and novelties. The total amount of capital stock invested is \$20,000, divided into eight hundred shares. The company contemplates beginning operations as soon as a suitable building for manufacturing purposes can be erected.

—Advices from Pará, dated March 28, state that Vianna is confident the year's crop will not exceed 1000 tons more than last year. The financial position was very favorable, calls from the banks for subscriptions meeting with a ready response.

—The Boston Car Spring Co., recently petitioned into insolvency, owes about \$115,778, including notes indorsed by T. C. Lathrop, treasurer of the company, who is also insolvent. Assets are: A factory on Terrace Street, mortgaged for \$15,000; machinery and tools, mortgaged for \$6000; accounts, cash, and miscellaneous amounting to \$11,150.

—The L. Candee Rubber Company took its annual inventory of stock the first part of this month. It should take about three weeks' time to thoroughly do this. This year, however, the factory closed only for twelve days.

—Geo. H. Appleton, well known the country over as the former sales agent of the Tyer Rubber Co., has been very ill with erysipelas at his home in Haverhill, Mass.

—The New York Belting and Packing Co. report that their business is equal to that of last year, and they thought that was very good—in fact better than they ever had done previously. The sales of gutta percha are far ahead of the receipts. The English company that controls the business is refusing all orders for tissue to be delivered within three or four months. Their own needs are paramount, and they believe that they will sooner or later be compelled to go out of the business. They have, however, made hay in the golden sunshine, if 20 per cent. dividends declared months ahead are any criterion. Gutta is gold to them, for rarely has there been such a mine worked in this country.

—The Goodyear Gossamer Company have purchased the stock of the Merrimac Rubber store, 66 Merrimac Street, Lowell, Mass., formerly owned by Messrs. Quinlan & Washburn, and have put in an entirely new stock of rubber goods, including every variety of gossamer and mackintosh, all of which are manufactured at their own establishment in Hudson, Mass.

—The Goodyear rubber store situated in the Masonic Temple, Lowell, Mass., suffered recently through fire. The large stock of rubber goods on hand, had only been on the premises a week. While the flames did not do much hurt to these goods, the water and the smoke injured many of the fine fabrics, and caused a considerable loss.

—In spite of the fact that a great many tubing machines are at the present time used in this country, there is a deal of the old-fashioned hand made tubing. Indeed, where extra strength is needed in rubber tubing, that which is wrapped by hand is preferable to the machine made article. One hindrance in the hand-made tubing is the tedious rolling which takes from one to three men with heavy wooden rolling boards. Few rubber manufacturers are aware of the fact perhaps that this rolling process can be done mechanically at a great saving in cost over the hand process. Cruikshank, of Providence, who has designed many fine machines for the rubber trade and who is known as one of the best mould makers in the country designed the tube rolling machine which is exceedingly simple and effective and can be had at low cost.

—The New Jersey Rubber Shoe Co., of New Brunswick, N. J., shut down the middle of March for annual repairs and inventory.

—The Lambertville Rubber Works, of Lambertville, N. J., took two weeks in the latter part of March for stock taking.

—The Newton Rubber Co., of Newton Upper Falls, Mass., shut down recently for needed repairs on their boiler.

—The good news comes from Clarksville, Tenn., that the fire committee and mayor were instructed by the council to purchase twelve rubber coats for the fire department. This should boom the rubber business this spring.

—A very handsomely illustrated pamphlet comes to us from the National India Rubber Co., of Bristol, R. I. But little space is taken in the catalogue for wordy descriptions of the goods, the pictured description being so excellent as to obviate anything of that kind. The cuts of the boots and shoes of all kinds are more than fine wood-cuts,—they are genuine likenesses. In each case the article that was to be depicted was put in position and both photographed and sketched, that every line might be perfect, and that the buyers might get an exact representation of the goods that the company offer for sale. A careful examination of this catalogue will pay any buyer of rubber footwear.

—The India Rubber Glove Co. report a good business in their several departments. There is a good demand for miner's goods, and other companies report this. Orders to average assortments are coming in for garments. Hip-boots are also being sold largely, the cork and rubber soles taking well with sportsmen. With the rough surface they readily allow the wading and slimy rock-climbing so often necessary, and as they wear evenly, presenting a new layer of sole as they wear away, they are found of decided advantage. The factory of this company is running full.

—The Peerless Rubber Co. have enough orders ahead to keep them busy until August. Some large orders for hydraulic running hose have been received. There is a very fair export demand from Mexico.

—Manufacturers are very generally complaining of dull business and with the high price of rubber are not in a satisfactory frame of mind. The season has been such as to call for heavy purchases of goods—especially garments—yet the garment trade is very dull. In the West, trade is almost nothing, and the South has an unsold cotton crop on its hands with advances reluctantly given for the coming one, which is a good reason for its buying sparingly. Sickness and very bad roads may account in part for the present stagnation, but the tide of affairs seems to be setting in against families dependent on salaries and fixed incomes. Prudent people find in the high prices of food and necessary articles an increase in their expenses averaging, they say, twenty per cent.; consequently retrenchment in the purchase of articles of luxury has commenced and will continue until the new basis is regulated as it will be by the laws of political economy.

—The Montreal Water-proof Co's establishment on Notre Dame Street was recently gutted by fire, which is supposed to be of incendiary origin.

—J. W. Godfrey, of the New York Insulated Wire Co., is on a trip in the West. George H. Meeker, of the same company, is on his regular trip and J. D. Olson left on the 12th April for a two weeks' journey in Pennsylvania. Business with this company is very fair, some large contracts having been obtained lately. A good business is being done in feeder wires for street railways. Among recent contracts was that of the Carnegie Music Hall in New York, which was furnished throughout by this company.

—On the 10th of April the firm of Hohmann & Maurer, manufacturers of Standard steam gauges and thermometers 169-167 Plymouth Street, Brooklyn, changed into a corporation under the name, "THE HOHMANN & MAURER MFG. CO." The change was compelled by increased sales of all their goods and the consequent necessity of increased capital to push their trade. Extensive alterations in their factory have been made, one of the most important being a new testing room in which 700 of their special thermometers can be kept under continuous test from 60° to 650°. An electro-plating department has also been added and placed in charge of an expert. The establishment will therefore henceforth be able to make every variety of plate and finish in unsurpassed quality. The staff will also be reinforced to a point of highest skill and efficiency. The company will make light brass and iron goods—plated, japanned and rough. Its officers are Messrs. August B. Hohmann, pres., Henry W. Maurer, manager, E. B. Wilcox, treas., Jas. C. Meeks, sec'y. The new company will have the best wishes of the trade for a long and prosperous career.

—Mackintoshes have for some time past been constantly improving in shape. Backs that remind one of a collapsed balloon and fronts in all stages of bagginess are slowly passing out of date. The India Rubber Glove Co. foreseeing that this is the coming point in garments have engaged the best cutter they could find, and their mackintoshes now fit in consonance with the name of the company.

—The good taste in rubber goods shown in the Hodgman manufactures are exemplified in a tasty rubber head-rest to be used on shipboard and in the country. It is of silk in elegant design on bright colors and has the form of a crescent. It can be packed in a small pocket in a minute and whipped out and inflated for use in the next. The delicately scented toilet sets of this company are meeting with the large sale that they deserve.

—Mr. B. Blundstone, the superintendent of David Mosley's works in England, is in this country at the present time on a brief business visit.

—Thomas A. Forsyth, the well-known superintendent of the works of the Boston Belting Co., has just returned from an extended trip in Bermuda, Cuba and Jamaica. Mr. Forsyth has been with the company for twenty years with few outings and this vacation is well merited. Since his return he talks of nothing but the beauties of the tropical skies, and for the moment rubber and its manufacture are of minor importance.

—The Saratoga Rubber Works have at last been taken in hand by Mr. Carpenter, a large shirt manufacturer, who will utilize the 57 sewing machines that are a part of the plant. He gets also a 48 horse engine, a 60 horse boiler and 9000 square feet of floor space, heated by steam throughout. He expects to put in about 130 machines and will run the factory at full time. While it is a pity that this fine plant could not have been kept as a rubber mill, it is no doubt to the advantage of Saratoga Springs to have it running as it is.

—It is said that a number of heavy New York capitalists are about to start a large rubber factory in New Jersey near the present plant of the West Bergen Steel Works.

—James F. Brook, of Brook, Oliphant & Co., has created a sensation in rubber circles, by going, temporarily or otherwise, to parts unknown. This has disturbed matters seriously and caused the downfall of William B. Brook & Co., the senior partner being a son of James F. Brook. Brook, Oliphant & Co. are understood to be perfectly responsible, although there may be much litigation in the future affairs of the company.

—The Goodyear rubber factory, at Middletown, Conn., will be closed for two or three weeks for repairs.

Additional Letters to the Editor.

The India Rubber Tree of Florida.

EDITOR INDIA RUBBER WORLD:—Last summer I received from you a letter requesting sample of the sap or gum of the India rubber tree growing in this section. Before leaving for the North I wrote to you saying that sample would be forwarded. I fear my man forgot to attend to it, and since my return I have been busy and frequently away from Linwood. I beg to apologize, and send you by this mail a very small sample. I regret that I could not get more, but probably in the spring the sap will flow more freely. There are numbers of rubber trees here, all wild, but the cost of land being about \$900 per acre (not cleared) would, I should think, seriously interfere with planting the trees for profit. This is a pine-apple country and as the growers claim to make from \$300 to \$700 per acre yearly from their crops, they naturally consider land valuable that is capable of yielding such results. Again apologizing for long delay in attending to your requests.

Sincerely, VAN ARSDALE WINANS.

Linwood, Eden on Indian River, Fla., February 6, 1891.

[The bottle of rubber sap accompanying this pleasant letter arrived safely and has since been on exhibition at the office of the WORLD. Our chemist has not yet pronounced upon its character, and as the editor is not familiar with India rubber in the form of milk, he does not feel very wise about it. Residents in some other parts of Florida than Eden may some time look to the rubber tree for support, but as Mr. Winans suggests, a profit of from \$300 to 700 per acre, yearly, with crops that mature as quickly as pine-apples do, would interfere with the planting of rubber trees for profit.—ED.]

From an Old Sailor.

EDITOR INDIA RUBBER WORLD:—You may be interested to hear a few words from a man who has spent some little time in the rubber country. To tell the truth, I have been in almost all rubber countries,—have seen rubber trees growing in Mexico, in Central America, in South America, rubber vines in Africa, and lastly, I was down in Ceylon and saw quite a considerable orchard of young rubber trees that were just beginning to be old enough to tap. These trees in that country seemed to be very tough, and any amount of notching, or cutting, or ringing, troubles them but little. When they want to really stab a tree in good shape, they use a big double-bladed knife and cut upwards after having peeled off the outside bark. These trees they tap twice a day. They take about twenty trees, and after having finished sticking them, they go back, and starting over, gather what rubber has run out. For gathering this rubber they have a hand-roller which makes the coagulated rubber come off in strings. I did not see many of these orchards in this part of the country, but hear that there are larger and more profitable ones than the one I visited. Although I am not a rubber man, I enjoy reading THE INDIA RUBBER WORLD, and if I were only literary enough, should enjoy writing for it.

Very truly yours,

GEORGE SMITH.

Rubber Blacking.

EDITOR INDIA RUBBER WORLD:—Will you kindly inform me whether the old-fashioned rubber blacking for use on leather goods is still in existence, and if it was a success? R. F. M.

[A Providence manufacturer, whose name at the moment we do not recall, produced what was known as Derry's Water-proof Harness Oil, which was said to be made from ivory black, seal oil, tallow and India rubber. This was used on carriage tops, on boots and shoes, and was said to be a great leather preserver,

Whether anything of this kind is manufactured by other parties, we cannot at the moment tell.—ED.]

Syndicate Market Reports on Rubber.

A NEWS AGENCY in New York contemplates bringing a syndicate rubber market by cable to New York from Pará, Hamburg, London, and Liverpool. At present each importer has a cable report from these points, some daily, others twice per week, and so on, and the aggregate in money spent is considerable, and falls heavily on the individual broker in the trade.

The tariff from Pará from New York is about \$1.93 per single word, and twenty-five cents per word to European points. Each broker has his separate code, embracing in some instances over 100,000 words.

The languages are hunted thoroughly for words, that will reduce the chances of an error to a minimum. A word that does not differ from another by more than one letter is discarded. Proper names are disallowed by the telegraph and cable people. Also lengthy words, say those of more than ten letters, are charged double.

So it will readily be seen by the layman that a good code is not readily obtainable. An ordinary message from Pará generally states the date of filing, receipts, stocks in first hands and in second hands, shipments, price for "upriver" and "islands," sailings of steamers with amount of cargo, and other miscellaneous information. As the addresses and signatures are counted and charged for, it can be seen that, with the greatest skill in the handling of a code, a cablegram is a costly transaction, and manufacturers as a rule, do without them, although to keep posted is as much to their interest when making a large transaction, as it is for the broker.

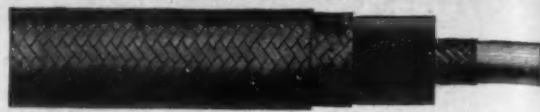
Cables from London and Hamburg are not so expensive, and generally not so important in a speculative sense, but in the growing demand for Africans in this country, a time is near at hand when information in regard to the fluctuations in the London market will be important to the buyer and seller alike. Cables from Singapore, the gutta percha centre, are very expensive, and filter through to this country via England, reaching here as second handed.

Syndicate cables are very common in other lines, for instance, Beerbohm's review of the grain markets of the world is in every produce broker's office before he begins business in the morning, and again in the afternoon. Two news agencies in Wall Street vie with each other in furnishing London and Continental financial news, and in times of panic, or war rumors they have been known to order reports by cable every few minutes.

In metals and cotton there is a similar arrangement, and through the whole range of articles, some effort in each of them has been made to combine interests and save expenses.

The attempt will be made to obtain enough customers in New York and Boston, to warrant the giving of full and correct information for a comparatively small price per week. This price will be in the shape of a fixed sum, not so onerous as to put it beyond the range of all pecuniarily interested in the rubber market.

The "CLARK" WIRE



INSULATION GUARANTEED WHEREVER USED, AERIAL, UNDERGROUND OR SUBMARINE.

In a letter from the Inspector of the Boston Fire Underwriters' Union, under date of March 29, 1886, he says:—
"A THOROUGHLY RELIABLE AND DESIRABLE WIRE IN EVERY RESPECT."

THE rubber used in insulating our wires and cables is especially chemically prepared, and is GUARANTEED TO BE WATERPROOF, and WILL NOT DETERIORATE, OXIDIZE or CRACK, and will remain flexible in extreme cold weather, and is not affected by heat. The insulation is protected from mechanical injury by one or more braids, and the whole slicked with Clark's Patent Compound, which is water, oil, acid, and to a very great extent fire-proof. OUR INSULATION WILL PROVE DURABLE WHEN ALL OTHERS FAIL. We are prepared to furnish single Wires of all gauges and diameter of insulation for Telegraph and Electric Lights from stock. Cable made to order. We are now prepared to furnish our Clark Wire with a WHITE OUTSIDE FINISH for ceiling cleat work as well as our standard color.

CLARK JOINT GUM should be used for making water-proof joints. This is put up in half-pound boxes, in strips about one foot long and five-eighths inch wide, and when wrapped about a joint, and pressed firmly makes a solid mass.

FOR RAILWAY AND MOTOR use, we make all sizes of stranded and flexible cables with Clark insulation. Wire Tables and price list will be furnished on application to

HENRY A. CLARK, Treasurer and General Manager.
HERBERT H. BUSTIN, President and Electrician.

EASTERN ELECTRIC CABLE COMPANY,
61 to 65 Hampshire Street, Boston, Mass.

Mention the India Rubber World when you write.

MONEY

CAN BE MADE Manufacturing Rubber Stamps. Send for price of Outfits to J. F. W. DORMAN & CO., 217 East Gorman Street, Baltimore, Md., U. S. A.

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Free Want Department.

WANTED—By a young man of experience, who understands the rubber business, a position as travelling salesman for a first-class rubber house, have a trade in Indiana. Reference given. Address "T. F. B.," INDIA RUBBER WORLD Office.

WANTED—A first-class salesman to sell a line of rubber clothing, gossamers, boots, shoes and oil clothing. Address, RUBBER COMPANY, INDIA RUBBER WORLD OFFICE.

WANTED—A position by first-class sawyer, as fore-man in a rubber, horn or celluloid comb factory. Experience 20 years. Fully understands hammering saws. Has various new ideas in regards to sawing, also competent to run the new improved grilling machines. Address to MR. M. PURSELL, 402 East 7th Street, New York City.

FOR SALE—Fifty tons of old rubber boots and shoes, standard packing, free from Arctics and Hoses. Highest bidder receives the stock. Address Boots, INDIA RUBBER WORLD.

WANTED—A position as Supt. or Foreman by a man forty years of age and 15 years' experience in making Rubber Clothing. Fully understands the business in all its branches. Single and double texture. Can make my own varnish and do my own vulcanizing. Best of references. Address, "MACKINTOSH," INDIA RUBBER WORLD.

WANTED—A position as superintendent or general foreman, by a thoroughly practical rubber man and capable manager. Would run a small business on commission. Address "Energy," INDIA RUBBER WORLD Office.

FOR SALE—An extra nice steam vulcanizer 9 feet and 2 inches long, and feet in diameter. Address Dana, INDIA RUBBER WORLD.

WANTED—A position as salesman by a first-class man. Have ten (10) years experience in rubber clothing as salesman and manager. Well acquainted with the trade in New York, Pennsylvania, Ohio, Kentucky and Indiana. References. Address R. S., INDIA RUBBER WORLD.

WANTED—By Eastern manufacturers of rubber belting, hose, packing, etc., a thoroughly competent salesman; one familiar with Western trade and who can furnish best of references. A good salary and permanent position to right party. Address P. O. Box 1299, Boston, Mass.

WANTED—A first-class all around man in rubber mill less than 10 miles from New York City. Must be a man on hose belting packing. To the right party steady employment and good pay. Address "C. H. D.," INDIA RUBBER WORLD.

WANTED—Position by a first-class travelling man of experience, thoroughly acquainted with the rubber business in all its varieties, including mechanical goods, clothing, both oiled and rubber; boots and shoes, druggists' sundries, etc. Address J. L. C., 125 Court St., Buffalo, N. Y.

WANTED—A second-hand vulcanizer. Must be 5 ft. inside diameter and from 16 to 24 ft. long. Parties having such for sale can find immediate sale for same by giving particulars, price, where located, etc. Address "C. H. D.," INDIA RUBBER WORLD.

WANTED—Correspondence with first-class houses who wish to sell rubber clothing and rubber boots and shoes in the Southwest. Address, G. E. C. J., INDIA RUBBER WORLD Office.

FOR SALE—A semi-circular corrugated iron roof, size 16x28 feet; suitable for a boiler or storehouse. Write to or inquire of TYER RUBBER CO., Andover, Mass.

A POSITION is desired by man who has had seven years experience in reclaiming rubber from clippings, old boots and shoes by the acid process. Thoroughly acquainted with the process of boiling, washing, sheeting and grinding. Devulcanizing with all the latest improvements in the shoddy business. Samples of all kinds sent on request. Best references. Address B. W., INDIA RUBBER WORLD Office.

THE NEWTON RUBBER COMPANY.

Factory: Newton Upper Falls, Mass.

Office: 116 Bedford Street, Boston.

E. R. BAND, Manager.

H. G. PARK, Sup't.

The only Company that, while making a general line of Mechanical Goods, make a SPECIALTY of the manufacture of

Rubber Springs and Valves.

A YOUNG MAN of 25, active, well educated, and well acquainted with the trade in New York City and vicinity, wishes to represent some first-class Rubber Manufacturer, or take charge of city office. Address "S," Room 293 Potter Building, New York City.

WANTED—By a young man experienced in all kinds of rubber goods and oil clothing, a position to represent some Rubber Company in New England. Address "Z," INDIA RUBBER WORLD Office.

A YOUNG MAN experienced in the general rubber business, desires a position as salesman in some good house or on the road. Best of references. Address Position, INDIA RUBBER WORLD Office.

WANTED—By an A1 rubber clothing salesman a position with a rubber company, manufacturing a full line of rubber clothing. An established trade in Western Pennsylvania and Central and North-eastern Ohio. Would like to handle line of sundries and mechanical goods. Can furnish best of reference from previous employer. Address at once "Rubber," General Delivery, Cleveland, Ohio.

ADVERTISER, who enjoys a large and lucrative trade in mechanical goods in Pennsylvania, and adjacent States, is open for an engagement. Has a long acquaintance with his trade, who generally require high grade goods. Can bring unquestioned record, large experience and unstinted energy. Would not object to the South or West as manager or representative. Address Mechanics, care INDIA RUBBER WORLD.

RUBBER GRINDERS OR MIXERS WANTED—State size, price and where they may be seen. HODGMAN RUBBER COMPANY, Tuckahoe, N. Y.

AGENT now representing leading manufacturers of soft and hard rubber goods in Western Pennsylvania wants to add agencies for first-class manufacturers of rubber garments, etc., and rubber boots and shoes. Office and all facilities. Centrally located. Address A 1 INDIA RUBBER WORLD Office.

WANTED—To correspond with some one capable of superintending the manufacture of moulded rubber goods such as springs, valves, gaskets, rings, etc. Located in a large Western city. To the right party there is a future. Address N., INDIA RUBBER WORLD.

FOR SALE—Letters patent for the Manufacture of Seamless Tube Hose this patent granted five years ago is now in my possession, and I offer it for sale. Who wants it? for particulars address, Hoese, 702 Mill Street, Akron, Ohio.

FOR SALE—Complete Rubber plant for gossamer business with sewing machines, etc., or would let with privilege. Address W. F. OSBORNE, Ansonia, Conn.

The Rubber Market.

THE situation during the past month has not practically changed, and the test of the corner is not expected for two or three months. The parties at Pará are pursuing the even tenor of their way, and each successive movement on the part of Baron du Gonderiz is closely scrutinized. Brazilian finances are closely watched and there is a hope on the part of those who will shortly be in the market that something may occur in this direction to loosen the grip of the syndicate. Exchange has been as low as 17½ reaching up to 18½ and last week returning on the downward scale to 17½ where it will remain according to custom this week. Prices at Pará have been as high as 4300 milreis for up river but now are 4100 milreis. Mail advices state that the subscriptions to the capital of the bank furnishing advances are being paid under the last call, although some parties report cables which throw a suspicion on the evenness of the meeting of these demands.

The receipts at Pará for March were 1565 tons against 1700 tons for the same time one year ago.

The stocks at Pará March 31 were said to be 1105 tons, against 605 tons last year. The world's stocks at 4136 tons against 2544 tons the year previous, of these the United States held 1126, England 940, Pará as stated, in transit to the United States 700 tons against 400 in 1890 and miscellaneous 400 tons. Vianna is supposed to hold about 2400 tons at a value of \$4,000,000. The receipts at Pará for April so far have been 180 tons.

The arrivals in New York during the month have been by the *Gregory* 400 tons fine, 135 coarse, 10 caucho, *Ambrose*, 240 fine, 85 coarse, 20 caucho, *Allianca* 46 fine, 23 coarse, 20 caucho, *Seguransa* 115 fine, 21 coarse, and the *Cearense* 29 fine, 35 coarse, 25 caucho. Afloat there are the *Justin* with 270 fine and 20 caucho and the *Advance* with 30 fine, both vessels for the United States; in addition there are 470 tons fine, and 30 caucho for Europe.

The New York market has been quiet, but on a rising ground within the past ten days. Prices have been reported as high as 93 cents. Considerable coarse has been sold for export, both by Vianna brokers and the principal New England holders.

Considerable has been transhipped by one large house, and one firm sold 20 tons to go to England and the Continent to manufacturers in both cases. Another order has been given, and still another is waiting a price. Foreign manufacturers have been altogether without faith in Vianna, and now are coming in with some avidity. The exports have been principally of coarse which it does not pay to store. Stocks held abroad are 766 in first hand and 166 in second hands. Of the first it is stated that Vianna owns two thirds. Of African there are 379 tons. Cables quote the price of fine Pará at 44d. For one grade of cheap rubber, Liverpool brokers oversold April delivery, and were compelled to settle. Centrals in New York are scarce with however a poor demand.

The manufacturers are as a body somewhat solicitous over the situation. A few of them are well supplied, and will not have to come in the market until fall. Some of them will have pressing demands within a month, and they are not among the smaller. There seems to be no basis among them upon which to unite. A movement to close down is not in the interest of those who have foreseen the high prices and fortified themselves with good stocks; in fact, the high price for crude rather suits this class.

The subject is a perplexing one. Those who have good stocks are not altogether satisfied with the dull business now prevailing, while the hand to mouth buyer looks with equanimity upon the decreased demand for goods in which there is no profit.

The boot and shoe men are in the same peculiar position as heretofore.

The Woonsocket and one or two other companies advanced prices March 15, making discounts 45&10, but it has as yet had little effect on the situation. Blanket orders were liberal before the advance, and there is no excessive anxiety to call for a detail on the part of any one. Most of the factories have closed for a few days at least to take account of stock.

Stocks are said to be large. A good demand is had for tennis shoes and storm slippers under its various names.

Clothing is dull. Factories are not busy.

Gutta percha is quiet. Tissue commands a high price and goods are relatively scarce. Quotations are entirely nominal. Orders are about four months ahead of the supply.

Simpson & Beers report that there has been a very limited demand for rubber paper, owing partly to the spring demand for business uses. A better demand for paper is looked for as the month advances. Prime double name sells at 6 per cent. and single name mostly from 6½ to 8 as to grade, three or four months' maturity. A comparatively easy market is expected until August next. Simpson & Beers also furnish the following range of prices for March:

March 31, 1891.

Statistics of Pará Rubber.

Stock of Pará here Feb. 28th, about.....	1,950,000 lbs.
Receipts " " March "	2,530,000 "
Deliveries " " " "	2,380,000 "
Stock " " " 31, 1891 "	800,000 "
" " " " 1890 "	2,100,000 "
" " " " 1889 "	1,650,000 "

Prices for March.

	1891.		1890.		1890.	
	Fine.	Coarse.	Fine.	Coarse.	Fine.	Coarse.
First.....	87	60	80	60	75	52½
Highest.....	91	61	85	65	77	53
Lowest.....	90	60	80	60	75	52
Last.....	90	60	84	64	77	53

The latest New York quotations are:

Para, fine, new.....	80-90	Sierra Leone.....	48-51
Para, fine, old.....	91-93	Benguela.....	57-59
Para, coarse, new.....	60-62	Congo Ball.....	49-50
Para, coarse, old.....	63-65	Small Ball.....	46-50
Caucho (Peruvian) strip.....	55-57	Soft Ball.....	36-37
Caucho (Peruvian) ball.....	62-64	Flake, Lump and Ord.....	34-35
Mangabaira, sheet.....	60-62	Mozambique, red ball.....	34-35
Esmeralda, sausage.....	60-62	Mozambique, white ball.....	34-35
Guayaquil, strip.....	46-48	Madagascar, pinky.....	60-71
Virgin Scrap.....	46-48	Madagascar, black.....	50-58
Carthagea, strip.....	42-44	Borneo.....	42-56
Nicaragua, scrap.....	57-59	Gutta percha, fine grade.....	140@150
Nicaragua, sheet.....	55-57	Gutta percha, medium.....	100
Guatemala, sheet.....	52-54	Gutta percha, hard white.....	100
Thimbles.....	51-52	Gutta percha, lower sorts.....	60-85
Tongues.....	45		

Gutta percha is entirely nominal.

The Empresa Industrial do Gram, Pará, of which Senator Don Jose Paes de Carvalho is president, have issued a circular dated Pará, March 16, and signed Samuel W. McDowell, Barao de Gondoriz and Anto. Braule Freda Silva, in which they state that it is their purpose to operate on a large scale in India rubber on the legitimate basis of supply and demand, avoiding extremely low and extremely high prices, thus giving the market the stability compatible with such operations, and serving as a regulating power between producers and consumers, whereby the manufacturers will be benefited, and a situation of more security created for all parties interested in that important product. The annual report of the *Mercantil* says that they were authorized to raise their capital to 5000 contos, the present capital being too small for successful operations. It further states that the decline in rubber in December caused serious losses, but subsequent purchases at lower prices fully evened the losses made at that time.

A dividend for the first six months was divided proportionately among the stockholders of 175 forfeited shares. A dividend of 10 per cent. will soon be declared, after which there will be a surplus of 12,000 milreis.

Charles Loewenthal will sail for Europe on the *Columbia* on the 16th to be absent four months.

Capacity 30,000 ft. Hose per day.

Our recently remodeled and enlarged hose rooms, having a floor space of 31,150 square feet, with special machinery and appliances, enable us, not only to produce best hose, but to consistently seek new trade without injustice to old customers, inasmuch as we can supply all promptly and give assurance of satisfactory dealings. We are now

THE LARGEST HOSE MAKERS IN THE COUNTRY

and as all is machine-made, more reliable and uniform hose is secured, and a pressure, impossible to obtain by hand, is exerted in making and rolling it, which in connection with excellent friction-rubber, cements the different plies together with great tenacity, giving a solid article, well knit and vulcanized together, unequaled for service and durability. In addition to this, we are

THE ONLY MAKERS OF HOSE WITH SEAMLESS TUBE

without which feature perfect hose cannot be made, as the lapped tube, which constitutes in itself a defect, is liable to crack open and admit water to the duck. NO-SEAM Hose also causes less friction to the current of water, because of its smooth water-way. This feature is

IMPERATIVELY DEMANDED IN FIRE DEPARTMENT HOSE

as water when forced through hose takes a spiral, rotary course, and the raised lapped-seam offers an obstruction that increases friction, it is estimated, about 8% over seamless, smooth-bore hose such as ours. As this feature is considered essential in fire hose, it must in ordinary hose have advantages. For instance, in garden hose it will enable the same pressure to throw water a greater distance, and inasmuch as all our hose, including Conducting, Brewers', Steam, etc., has this feature, and is made with the same degree of exactness and nicety as fire hose, it follows that the greatest service and durability will be attained. We are also

LARGE MAKERS OF COTTON HOSE

rubber-lined, and our product has points of superiority over others. The SEAMLESS TUBE is introduced in all sizes, and the rubber lining and cotton jacket are so strongly cemented that they are almost inseparable. The bore of the hose is practically free from corrugations, while in our brands of fire hose it presents a smooth, highly-polished surface. Our cotton jackets are all woven on circular looms, of the best yarns, and are capable of standing enormous pressure and of rendering excellent service.

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Mechanical Rubber Goods.
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Cleveland, Ohio.

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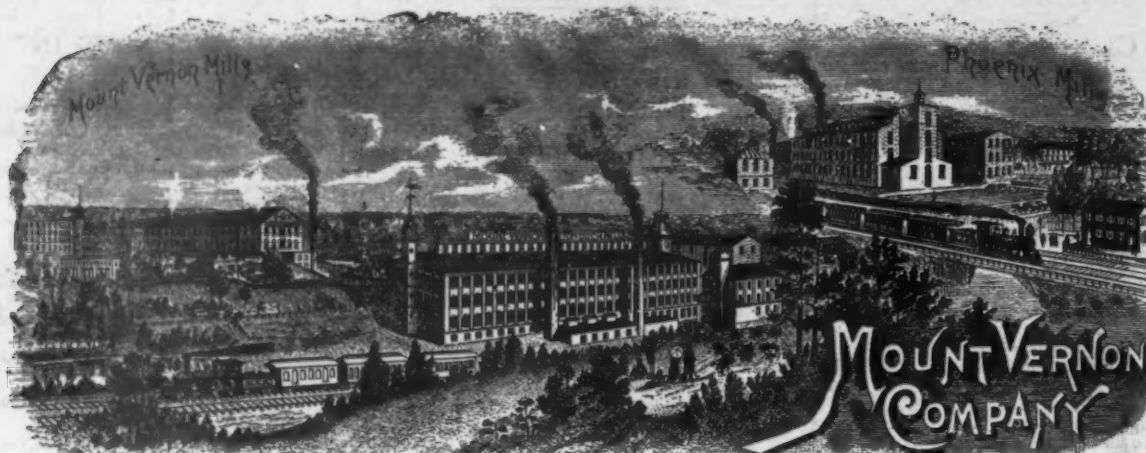
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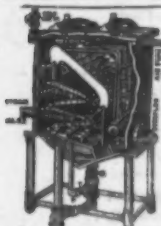
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Readily cleaned without stopping machinery. All parts accessible.

Furnished on trial for acceptance.

Before you decide upon the adoption of any Feed Water Heater and Purifier, or any device
for assisting the circulation of steam for heating purposes, (after receiving full information of
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Economizer over all pressure, coil, tubular or open heaters. Send for New Catalogue.

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For Mechanical Rubber Work.

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Designers and Builders of Special Machinery.

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